TRT USPTO Patent Filings				
Docket Number	USPTO Serial Number	Filing Date (day/month/year)	Titl	le
0079	11/122,154	05/04/2005	Pressure Pulse / Shock Wa and an Apparatus for Cond Methods	ve Therapy Methods lucting the Therapeutic
Publication Date: May 11, 2006 Publication No. US		2006/0100550 A1; Patent ]	No: <u>7,470,240</u>	
Grant Date: Dec 30, 2008 Status: Maint Fee: a		l paid		
Continuity: Continuation in part of 11		71,156 03-04-2005 Aba	indoned	
Claims Priority from Provisional Application		al Application 60/6	42,149 01-10-2005 Exp	pired
Claims Priority from Provisional Application		nal Application 60/6	21,028 10-22-2004 Exp	pired

The method of stimulating a substance is disclosed. The method has the steps of activating an acoustic shock wave generator or source to emit acoustic shock waves; and subjecting the substance to the acoustic shock waves stimulating said substance wherein the substance is positioned within a path of the emitted shock waves and away from a geometric focal volume or point of the emitted shock waves. In one embodiment the emitted shock waves are divergent or near planar. In another embodiment the emitted shock waves are convergent having a geometric focal volume of point at a distance of at least X from the source, the method further comprising positioning the substance at a distance less than the distance X from the source. The substance is a tissue having cells. The tissue can be an organ of a mammal. The mammal may be a human or an animal. The organ may be a heart, a brain, skin, a liver or a kidney or any other organ. The tissue may be muscle, cartilage, tendon, bone, teeth or gums. The tissue may be a part of the vascular system, a part of the nervous system, a part of the lymph node or pituitary systems, a part of the ocular system or a part of a skeletal system.

1. The method of stimulating a cellular substance comprises the steps of:

treating the cellular substance;

activating an acoustic shock wave generator or source to emit pressure pulses or acoustic shock waves directed toward the substance to impinge the substance with pressure pulses or shock waves having a low energy density in the range of 0.0001 mJ/mm<2 > to 1.0 mJ/mm<2>; the pressure pulse being an acoustic pulse which includes several cycles of positive and negative pressure, wherein the pressure pulse has an amplitude of the positive part of such a cycle should be above 0.1 MPa and the time duration of the pressure pulse is from below a microsecond to about a second, rise times of the positive part of the first pressure cycle in the range of nano-seconds (ns) up to some milli-seconds (ms), the acoustic shock waves being very fast pressure pulses having amplitudes above 0.1 MPa and rise times of the amplitude being below 100's of ns, the duration of the shock wave is typically below 1-3 micro-seconds ([mu]s) for the positive part of a cycle and typically above some micro-seconds for the negative part of a cycle; and

subjecting the cellular substance to convergent, divergent, planar or near planar acoustic shock waves or pressure pulses in the absence of a focal point impinging the substance stimulating a cellular response in the absence of creating cavitation bubbles evidenced by not experiencing the sensation of cellular hemorrhaging caused by the emitted waves or pulses in the substance wherein the cellular substance is positioned within a path of the emitted shock waves or pressure pulses and away from any

# **TRT USPTO Patent Filings** Docket **USPTO** Serial Filing Date Title Number Number (day/month/year) localized geometric focal volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the cellular substance or beyond the cellular substance thereby passing the emitted waves through the cellular substance while avoiding having any localized focal point within the cellular substance wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as $0.00001 \text{ mJ/mm} \le 2 > \text{ to a high end of below } 1.0 \text{ mJ/mm} \le 2 > 1.0 \text{ mJ/mm} \le 2 > 1.0 \text{ mJ/mm} \le 2 > 1.0 \text{ mJ/mm} \le 1.0 \text{ mJ/m} \ge 1.0 \text{ mJ/mm} \le 1.0 \text{ mJ/m} \ge 1.0$ 2. The method of stimulating a substance of claim 1 wherein the substance is a tissue having cells. 3. The method of stimulating a substance of claim 2 wherein the tissue is an organ of a mammal. 4. The method of stimulating a substance of claim 2 wherein the tissue is muscle. 5. The method of stimulating a substance of claim 2 wherein the tissue is cartilage 6. The method of stimulating a substance of claim 2 wherein the tissue is tendon. 7. The method of stimulating a substance of claim 2 wherein the tissue is bone. 8. The method of stimulating a substance of claim 7 wherein the bone has a non-union which is subjected to the acoustic shock waves to stimulate healing. 9. The method of stimulating a substance of claim 7 wherein the bone has an indication of bone cancer. 10. The method of stimulating a substance of claim 2 wherein the tissue is teeth. 11. The method of stimulating a substance of claim 2 wherein the tissue is gums. 12. The method of stimulating a substance of claim 2 wherein the tissue is a part of the vascular system. 13. The method of stimulating a substance of claim 2 wherein the tissue is a part of the nervous system. 14. The method of stimulating a substance of claim 13 wherein the nerves are damaged and the step of subjecting the tissue

including said nerves to shock waves include to stimulate healing or stimulate finding of severed or otherwise damaged nerve

TRT USPTO Patent Filings				
Docket Number	USPTO Serial	Filing Date	Title	
ends.	INUINDEL	(day/month/year)		
15. The method	of stimulating a substance	of claim 13 wherein the j	patient has an indication of paraplegia.	
16. The method	of stimulating a substance	of claim 2 wherein the tis	ssue is a part of the urinary or reproductive system.	
17. The method of	of stimulating a substance	of claim 2 wherein the ti	ssue is a part of the lymph node or pituitary systems.	
18. The method	of stimulating a substance	of claim 2 wherein the ti	ssue is a part of the ocular system.	
19. The method of	of stimulating a substance	of claim 2 wherein the ti	ssue is a part of a skeletal system.	
20. The method of stimulates at lease endothelial grow	20. The method of stimulating a substance of claim 2 wherein the step of subjecting the substance to acoustic shock waves stimulates at least some of said cells within said substance to release or produce one or more of nitric oxygen (NO), vessel			
21. The method	of stimulating a substance	of claim 2 wherein the su	ubstance tissue has a pathological condition.	
22. The method of stimulating a substance of claim 2 wherein the substance tissues have been subjected to a prior trauma.				
23. The method of stimulating a substance of claim 2 wherein the substance tissue has been subjected to an operative procedure.				
24. The method	of stimulating a substance	of claim 2 wherein the su	ubstance tissue is in a degenerative condition.	
25. The method of stimulating a substance of claim 1 wherein the substance is a tissue in a degenerative condition.				
26. The method	of stimulating a substance	of claim 2 wherein the ti	ssue has an indication of diabetes.	
27. The method of	of stimulating a substance	of claim 2 wherein the tis	ssue has an indication of cystic fibrosis.	
28. The method	of stimulating a cellular su	bstance comprises the ste	eps of:	
treating the cellu	lar substance;			
activating an aco	oustic shock wave generato	r or source to emit acous	tic shock waves directed toward the substance to impinge the	
substance with sl	hock waves having a low e	energy density in the rang	ge of 0.0001 mJ/mm $<2 >$ to 1.0 mJ/mm $<2 >$ ; the pressure	

pulse being an acoustic pulse which includes several cycles of positive and negative pressure, wherein the pressure pulse has an amplitude of the positive part of such a cycle should be above 0.1 MPa and the time duration of the pressure pulse is from below a microsecond to about a second, rise times of the positive part of the first pressure cycle in the range of nano-seconds (ns) up to some milli-seconds (ms), the acoustic shock waves being very fast pressure pulses having amplitudes above 0.1 MPa and rise times of the amplitude being below 100's of ns, the duration of the shock wave is typically below 1-3 micro-seconds ([mu]s) for the positive part of a cycle and typically above some micro-seconds for the negative part of a cycle; and subjecting the cellular substance to convergent, divergent, planar or near planar acoustic shock waves or pressure pulses in the absence of a focal point impinging the substance stimulating a cellular response in the absence of cellular damage evidenced by not experiencing the sensation of cellular hemorrhaging caused by the emitted waves or pulses in the substance wherein the cellular substance is positioned within a path of the emitted shock waves or pressure pulses and away from any localized geometric focal volume or point of he cellular substance while avoiding having any localized focal point within the cellular substance wherein the emitted shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or balistic wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or balistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm<2 > to a high end of below 1.0 mJ/mm<2 > wherein the absence of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging.	Docket Number	USPTO Serial Number	Filing Date	Title
<ul> <li>amplitude of the positive part of such a cycle should be above 0.1 MPa and the time duration of the pressure pulse is from below a microsecond to about a second, rise times of the positive part of the first pressure cycle in the range of nano-seconds (ns) up to some milli-seconds (ms), the acoustic shock waves being very fast pressure pulses having amplitudes above 0.1 MPa and rise times of the amplitude being below 100's of ns, the duration of the shock wave is typically below 1-3 micro-seconds ([mu]s) for the positive part of a cycle and typically above some micro-seconds for the negative part of a cycle; and subjecting the cellular substance to convergent, divergent, planar or near planar acoustic shock waves or pressure pulses in the absence of a focal point impinging the substance stimulating a cellular response in the absence of cellular damage evidenced by not experiencing the sensation of cellular hemorrhaging caused by the emitted waves or pulses in the substance wherein the cellular substance is positioned within a path of the emitted shock waves or pressure pulses and away from any localized geometric focal volume or point of the emitted shock waves are convergent, divergent, planar or near planar acoustic focal point within the cellular substance through the cellular substance wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point of the emitted shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm&lt;2 &gt; to a high end of below 1.0 mJ/mm&lt;2 &gt; wherein the cellular substance of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging.</li> <li>29. The method of stimulating a substance of claim 28 wherein the tissue is an organ of a mammal.</li> <li>30. The method of stimulating a substance of claim 28 wherein the tissu</li></ul>	pulse being an a	coustic pulse which include	es several cycles of posit	ive and negative pressure, wherein the pressure pulse has an
microsecond to about a second, rise times of the positive part of the first pressure cycle in the range of nano-seconds (ns) up to some milli-seconds (ms), the acoustic shock waves being very fast pressure pulses having amplitudes above 0.1 MPa and rise times of the amplitude being below 100's of ns, the duration of the shock wave is typically below 1-3 micro-seconds ([mu]s) for the positive part of a cycle and typically above some micro-seconds for the negative part of a cycle; and subjecting the cellular substance to convergent, divergent, planar or near planar acoustic shock waves or pressure pulses in the absence of a focal point impinging the substance stimulating a cellular response in the absence of cellular damage evidenced by not experiencing the sensation of cellular hemorrhaging caused by the emitted waves or pulses in the substance wherein the cellular substance is positioned within a path of the emitted shock waves or pressure pulses either have no geometric focal volume or point of the emitted shock waves wherein the meinted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the cellular substance or beyond the cellular substance thereby passing the emitted maves through the cellular substance while avoiding having any localized focal point within the cellular substance wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm<2 > to a high end of below 1.0 mJ/mm<2 > wherein the cellular substance of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging.	amplitude of the	positive part of such a cycl	le should be above 0.1 N	IPa and the time duration of the pressure pulse is from below a
<ul> <li>some milli-seconds (ms), the acoustic shock waves being very fast pressure pulses having amplitudes above 0.1 MPa and rise times of the amplitude being below 100's of ns, the duration of the shock wave is typically below 1-3 micro-seconds ([mu]s) for the positive part of a cycle and typically above some micro-seconds for the negative part of a cycle; and</li> <li>subjecting the cellular substance to convergent, divergent, planar or near planar acoustic shock waves or pressure pulses in the absence of a focal point impinging the substance stimulating a cellular response in the absence of cellular damage evidenced by not experiencing the sensation of cellular hemorrhaging caused by the emitted waves or pulses in the substance wherein the cellular substance is positioned within a path of the emitted shock waves or pressure pulses and away from any localized geometric focal volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the cellular substance or beyond the cellular substance thereby passing the emitted waves through the cellular substance while avoiding having any localized focal point within the cellular substance wherein the emitted pressure pulses or shock waves are convergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm&lt;2 &gt; to a high end of below 1.0 mJ/mm&lt;2 &gt; wherein the eabsence of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging.</li> <li>29. The method of stimulating a substance of claim 28 wherein the tissue is an organ of a mammal.</li> <li>30. The method of stimulating a substance of claim 28 wherein the tissue is muscle.</li> </ul>	microsecond to a	about a second, rise times o	of the positive part of the	first pressure cycle in the range of nano-seconds (ns) up to
<ul> <li>times of the amplitude being below 100's of ns, the duration of the shock wave is typically below 1-3 micro-seconds ([mu]s) for the positive part of a cycle; and subjecting the cellular substance to convergent, divergent, planar or near planar acoustic shock waves or pressure pulses in the absence of a focal point impinging the substance stimulating a cellular response in the absence of cellular damage evidenced by not experiencing the sensation of cellular hemorrhaging caused by the emitted waves or pulses in the substance wherein the cellular substance is positioned within a path of the emitted shock waves or pressure pulses and away from any localized geometric focal volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the cellular substance or beyond the cellular substance thereby passing the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm&lt;2 &gt; to a high end of below 1.0 mJ/mm&lt;2 &gt; wherein the absence of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging.</li> <li>29. The method of stimulating a substance of claim 28 wherein the tissue is an organ of a mammal.</li> </ul>	some milli-secor	nds (ms), the acoustic shock	x waves being very fast p	pressure pulses having amplitudes above 0.1 MPa and rise
the positive part of a cycle and typically above some micro-seconds for the negative part of a cycle; and subjecting the cellular substance to convergent, divergent, planar or near planar acoustic shock waves or pressure pulses in the absence of a focal point impinging the substance stimulating a cellular response in the absence of cellular damage evidenced by not experiencing the sensation of cellular hemorrhaging caused by the emitted waves or pulses in the substance wherein the cellular substance is positioned within a path of the emitted shock waves or pressure pulses and away from any localized geometric focal volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the cellular substance or beyond the cellular substance thereby passing the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm<2 > to a high end of below 1.0 mJ/mm<2 > wherein the cellular substance is a tissue having cells and the pressure pulses or shock waves stimulate a cellular response in the tissue in the absence of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging.	times of the amp	litude being below 100's of	f ns, the duration of the s	shock wave is typically below 1-3 micro-seconds ([mu]s) for
subjecting the cellular substance to convergent, divergent, planar or near planar acoustic shock waves or pressure pulses in the absence of a focal point impinging the substance stimulating a cellular response in the absence of cellular damage evidenced by not experiencing the sensation of cellular hemorrhaging caused by the emitted waves or pulses in the substance wherein the cellular substance is positioned within a path of the emitted shock waves or pressure pulses and away from any localized geometric focal volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the cellular substance or beyond the cellular substance thereby passing the emitted waves through the cellular substance while avoiding having any localized focal point within the cellular substance wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm<2 > to a high end of below 1.0 mJ/mm<2 > wherein the cellular substance of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging.	the positive part	of a cycle and typically abo	ove some micro-seconds	for the negative part of a cycle; and
absence of a focal point impinging the substance stimulating a cellular response in the absence of cellular damage evidenced by not experiencing the sensation of cellular hemorrhaging caused by the emitted waves or pulses in the substance wherein the cellular substance is positioned within a path of the emitted shock waves or pressure pulses and away from any localized geometric focal volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the cellular substance or beyond the cellular substance thereby passing the emitted waves through the cellular substance while avoiding having any localized focal point within the cellular substance wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm<2 > to a high end of below 1.0 mJ/mm<2 > wherein the cellular substance is a tissue having cells and the pressure pulses or shock waves stimulate a cellular response in the tissue in the absence of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging. 29. The method of stimulating a substance of claim 28 wherein the tissue is an organ of a mammal.	subjecting the ce	llular substance to converg	ent, divergent, planar or	near planar acoustic shock waves or pressure pulses in the
not experiencing the sensation of cellular hemorrhaging caused by the emitted waves or pulses in the substance wherein the cellular substance is positioned within a path of the emitted shock waves or pressure pulses and away from any localized geometric focal volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the cellular substance or beyond the cellular substance thereby passing the emitted waves through the cellular substance while avoiding having any localized focal point within the cellular substance wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm<2 > to a high end of below 1.0 mJ/mm<2 > wherein the cellular substance is a tissue having cells and the pressure pulses or shock waves stimulate a cellular response in the tissue in the absence of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging. 29. The method of stimulating a substance of claim 28 wherein the tissue is an organ of a mammal.	absence of a foca	al point impinging the subs	tance stimulating a cellu	lar response in the absence of cellular damage evidenced by
cellular substance is positioned within a path of the emitted shock waves or pressure pulses and away from any localized geometric focal volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the cellular substance or beyond the cellular substance thereby passing the emitted waves through the cellular substance while avoiding having any localized focal point within the cellular substance wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm<2 > to a high end of below 1.0 mJ/mm<2 > wherein the cellular substance is a tissue having cells and the pressure pulses or shock waves stimulate a cellular response in the tissue in the absence of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging. 29. The method of stimulating a substance of claim 28 wherein the tissue is an organ of a mammal.	not experiencing	, the sensation of cellular he	emorrhaging caused by t	he emitted waves or pulses in the substance wherein the
<ul> <li>geometric focal volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the cellular substance or beyond the cellular substance thereby passing the emitted waves through the cellular substance while avoiding having any localized focal point within the cellular substance wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm&lt;2 &gt; to a high end of below 1.0 mJ/mm&lt;2 &gt; wherein the cellular substance is a tissue having cells and the pressure pulses or shock waves stimulate a cellular response in the tissue in the absence of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging.</li> <li>29. The method of stimulating a substance of claim 28 wherein the tissue is an organ of a mammal.</li> <li>30. The method of stimulating a substance of claim 28 wherein the tissue is muscle.</li> </ul>	cellular substanc	e is positioned within a pat	h of the emitted shock w	vaves or pressure pulses and away from any localized
<ul> <li>geometric focal volume or point or have a focal volume or point ahead of the cellular substance or beyond the cellular substance thereby passing the emitted waves through the cellular substance while avoiding having any localized focal point within the cellular substance wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm&lt;2 &gt; to a high end of below 1.0 mJ/mm&lt;2 &gt; wherein the cellular substance is a tissue having cells and the pressure pulses or shock waves stimulate a cellular response in the tissue in the absence of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging.</li> <li>29. The method of stimulating a substance of claim 28 wherein the tissue is an organ of a mammal.</li> <li>30. The method of stimulating a substance of claim 28 wherein the tissue is muscle.</li> </ul>	geometric focal	volume or point of the emit	ted shock waves wherein	n the emitted shock waves or pressure pulses either have no
thereby passing the emitted waves through the cellular substance while avoiding having any localized focal point within the cellular substance wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm<2 > to a high end of below 1.0 mJ/mm<2 > wherein the cellular substance is a tissue having cells and the pressure pulses or shock waves stimulate a cellular response in the tissue in the absence of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging. 29. The method of stimulating a substance of claim 28 wherein the tissue is an organ of a mammal. 30. The method of stimulating a substance of claim 28 wherein the tissue is muscle.	geometric focal	volume or point or have a f	ocal volume or point ahe	ead of the cellular substance or beyond the cellular substance
cellular substance wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm<2 > to a high end of below 1.0 mJ/mm<2 > wherein the cellular substance is a tissue having cells and the pressure pulses or shock waves stimulate a cellular response in the tissue in the absence of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging. 29. The method of stimulating a substance of claim 28 wherein the tissue is an organ of a mammal. 30. The method of stimulating a substance of claim 28 wherein the tissue is muscle.	thereby passing	the emitted waves through	the cellular substance wh	hile avoiding having any localized focal point within the
<ul> <li>pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm&lt;2 &gt; to a high end of below 1.0 mJ/mm&lt;2 &gt; wherein the cellular substance is a tissue having cells and the pressure pulses or shock waves stimulate a cellular response in the tissue in the absence of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging.</li> <li>29. The method of stimulating a substance of claim 28 wherein the tissue is an organ of a mammal.</li> <li>30. The method of stimulating a substance of claim 28 wherein the tissue is muscle.</li> </ul>	cellular substanc	e wherein the emitted press	sure pulses or shock way	ves are convergent, divergent, planar or near planar and the
<ul> <li>generation having an energy density value ranging as low as 0.00001 mJ/mm&lt;2 &gt; to a high end of below 1.0 mJ/mm&lt;2 &gt; wherein the cellular substance is a tissue having cells and the pressure pulses or shock waves stimulate a cellular response in the tissue in the absence of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging.</li> <li>29. The method of stimulating a substance of claim 28 wherein the tissue is an organ of a mammal.</li> <li>30. The method of stimulating a substance of claim 28 wherein the tissue is muscle.</li> </ul>	pressure pulse sł	lock wave generator or sour	rce is based on electro-h	ydraulic, electromagnetic, piezoceramic or ballistic wave
<ul> <li>the cellular substance is a tissue having cells and the pressure pulses or shock waves stimulate a cellular response in the tissue in the absence of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging.</li> <li>29. The method of stimulating a substance of claim 28 wherein the tissue is an organ of a mammal.</li> <li>30. The method of stimulating a substance of claim 28 wherein the tissue is muscle.</li> </ul>	generation havin	g an energy density value r	anging as low as 0.0000	$1 \text{ mJ/mm} \le 2 > \text{to a high end of below } 1.0 \text{ mJ/mm} \le 2 > \text{wherein}$
<ul><li>the absence of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging.</li><li>29. The method of stimulating a substance of claim 28 wherein the tissue is an organ of a mammal.</li><li>30. The method of stimulating a substance of claim 28 wherein the tissue is muscle.</li></ul>	the cellular substance is a tissue having cells and the pressure pulses or shock waves stimulate a cellular response in the tissue in			
<ul><li>29. The method of stimulating a substance of claim 28 wherein the tissue is an organ of a mammal.</li><li>30. The method of stimulating a substance of claim 28 wherein the tissue is muscle.</li></ul>	the absence of cellular damage in the tissue evidenced by the avoidance of localized hemorrhaging.			
30. The method of stimulating a substance of claim 28 wherein the tissue is muscle.	29. The method	of stimulating a substance of	of claim 28 wherein the	tissue is an organ of a mammal.
	30. The method	of stimulating a substance of	of claim 28 wherein the	tissue is muscle.
31. The method of stimulating a substance of claim 28 wherein the tissue is cartilage.	31. The method	of stimulating a substance of	of claim 28 wherein the	tissue is cartilage.
32. The method of stimulating a substance of claim 28 wherein the tissue is tendon.	32. The method	of stimulating a substance of	of claim 28 wherein the	tissue is tendon.
33. The method of stimulating a substance of claim 28 wherein the tissue is bone.	33. The method	of stimulating a substance of	of claim 28 wherein the	tissue is bone.
34. The method of stimulating a substance of claim 33 wherein the bone has a non-union which is subjected to the acoustic shock waves to stimulate healing.	34. The method waves to stimula	of stimulating a substance on the stimulating a substance of the state	of claim 33 wherein the	bone has a non-union which is subjected to the acoustic shock

35. The method of stimulating a substance of claim 33 wherein the bone has an indication of bone cancer.

# **TRT USPTO Patent Filings** Docket **USPTO** Serial Filing Date Title Number Number (day/month/year) 36. The method of stimulating a substance of claim 28 wherein the tissue is teeth. 37. The method of stimulating a substance of claim 28 wherein the tissue is gums. 38. The method of stimulating a substance of claim 28 wherein the tissue is a part of the vascular system. 39. The method of stimulating a substance of claim 28 wherein the tissue is a part of the nervous system. 40. The method of stimulating a substance of claim 39 wherein the nerves are damaged and the step of subjecting the tissue including said nerves to shock waves include to stimulate healing or stimulate finding of severed or otherwise damaged nerve ends. 41. The method of stimulating a substance of claim 39 wherein the patient has an indication of paraplegia. 42. The method of stimulating a substance of claim 28 wherein the tissue is a part of the urinary or reproductive system. 43. The method of stimulating a substance of claim 28 wherein the tissue is a part of the lymph node or pituitary systems. 44. The method of stimulating a substance of claim 28 wherein the tissue is a part of the ocular system. 45. The method of stimulating a substance of claim 28 wherein the tissue is a part of a skeletal system. 46. The method of stimulating a substance of claim 28 wherein the step of subjecting the substance to acoustic shock waves stimulates at least some of said cells within said substance to release or produce one or more of nitric oxygen (NO), vessel endothelial growth factor (VEGF), bone morphogenetic protein (BMP) or other growth factors. 47. The method of stimulating a substance of claim 28 wherein the substance tissue has a pathological condition. 48. The method of stimulating a substance of claim 28 wherein the substance tissues have been subjected to a prior trauma. 49. The method of stimulating a substance of claim 28 wherein the substance tissue has been subjected to an operative procedure. 50. The method of stimulating a substance of claim 28 wherein the substance tissue is in a degenerative condition.

Docket Number	USPTO Serial Number	Filing Date (day/month/year)	Title
51. The method	of stimulating a substance	of claim 28 wherein the	substance is a tissue in a degenerative condition.
52. The method	of stimulating a substance	of claim 28 wherein the	tissue has an indication of diabetes.
55. The method	of stillulating a substance	or claim 26 wherein the	issue has an indication of cystic holosis.
<b>Divisionals</b> : <b>DN0079 DIV</b> Status: Grante	<b>1</b> 12/246,560 filed and 11/30/10 Maint Fee:	10/07/2008 Pub N all paid	Io. <u>2009/0254007A1</u> Patent No. <u>7,841,995</u>
1. The metho the tissue is e treating the cr activating an directed towa energy densit pulse which i amplitude of pulse is from cycle in the ra fast pressure ns, the duration and typically subjecting the pressure pulse absence of cr caused by the path of the era point of the era source is base energy densit	d of stimulating a cellu ither part of an organ of ellular substance; acoustic shock wave g rd the substance to imp y in the range of 0.000 ncludes several cycles the positive part of suc below a microsecond to ange of nano-seconds ( pulses having amplitude on of the shock wave is above some micro-sec e cellular substance to of es in the absence of a f eating cavitation bubble emitted shock waves or puls nitted shock waves or puls nitted shock waves or puls nitted shock waves or puls nitted shock waves wh cal volume or point or l ubstance thereby passir ocalized focal point wit nvergent, divergent, pla- ed on electro-hydraulic y value ranging as low	ilar substance wherei or the entire organ of enerator or source to pinge the substance w 01 mJ/mm<2 >to 1.0 of positive and nega th a cycle should be a to about a second, ris (ns) up to some milli- les above 0.1 MPa and s typically below 1-3 onds for the negative convergent, divergen focal point impinging les evidenced by not ses in the substance w pressure pulses and a herein the emitted sh have a focal volume ng the emitted waves thin the cellular substance anar or near planar a e, electromagnetic, pi w as 0.00001 mJ/mm<	in the cellular substance is a tissue having cells and a human or animal comprises the steps of: emit pressure pulses or acoustic shock waves with pressure pulses or shock waves having a low ) mJ/mm<2>; the pressure pulse being an acoustic tive pressure, wherein the pressure pulse has an above 0.1 MPa and the time duration of the pressure set times of the positive part of the first pressure -seconds (ms), the acoustic shock waves being very nd rise times of the amplitude being below 100's of micro-seconds ( $\mu$ s) for the positive part of a cycle e part of a cycle; and at, planar or near planar acoustic shock waves or g the substance stimulating a cellular response in the experiencing the sensation of cellular hemorrhaging wherein the cellular substance is positioned within a tway from any localized geometric focal volume or ock waves or pressure pulses either have no or point ahead of the cellular substance or beyond through the cellular substance while avoiding tance wherein the emitted pressure pulses or shock and the pressure pulse shock wave generator or ezoceramic or ballistic wave generation having an <2 >to a high end of below 1.0 mJ/mm<2>.

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planar, or where	ein the emitted shock	waves are converge	ent having a geometric focal volume or point at a
distance of at le	east X from the gener	ator or source, the m	nethod further comprising positioning the substance
at a distance les	ss than the distance X	from the source.	
3. The method or a kidney.	of stimulating a subst	cance of claim 1 whe	rein the organ is either a heart, a brain, skin, a live
4. The method of shock waves in the shock waves in	of stimulating a subst cludes the step of trea	ance of claim 3 whe ating cirrhosis of the	rein the step of subjecting the substance to acoustic liver.
5. The method of myelodysplasia	of stimulating a subst ı.	ance of claim 3 whe	rein the substance has an indication of
6. The method of shock waves inc	of stimulating a subst cludes the step of cor	ance of claim 1 whe recting a pathologic	arein the step of subjecting the substance to acoustic al growth of the epiphysial plate.
7. The method of stimulating a substance of claim 1 wherein the step of subjecting the substance to acoustic shock waves includes killing bacteria by destroying bacterial cell membranes or stimulating a biological defense mechanism within said substance by exposure to the acoustic shock waves.			
8. The method	of stimulating a subst	ance of claim 1 whe	rein the substance includes one or more vertebrae.
9. The method of stomach has on	of stimulating a subst e or more stomach ul	cance of claim 1 whe cers.	arein the substance is the stomach and wherein the
10. The method surrounding tiss	l of stimulating a subs	stance of claim 1 wh	herein the substance further includes a joint and
11. The method	l of stimulating a sub	stance of claim 10 w	wherein the substance has an indication of arthritis.
12. The method	l of stimulating a sub	stance of claim 10 w	herein the substance has an indication of gout.
13. The method disease and who	l of stimulating a sub- erein the rheumatic d	stance of claim 1 wh isease is Lupus.	herein the substance has an indication of rheumatic
14. The method acoustic shock	d of stimulating a sub- waves includes the st	stance of claim 1 wh ep of treating osteop	herein the step of subjecting the substance to porosis.

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15. The method of stimulating a substance of claim 1 wherein the step of subjecting the substance to acoustic shock waves includes the step of treating pseudoarthrosis.

16. The method of stimulating a substance of claim 1 wherein the step of subjecting the substance to acoustic shock waves includes the step of treating HIV.

17. The method of stimulating a substance of claim 1 wherein the step of subjecting the substance to acoustic shock waves includes the step of treating periodontal diseases.

18. The method of stimulating a substance of claim 1 wherein the step of subjecting the substance to acoustic shock waves includes the step of treating emphysema.

19. The method of stimulating a cellular substance wherein the cellular substance is a placenta having stem cells, or a patient having stem cells or a culture of stem cells comprises the steps of: treating the cellular substance;

activating an acoustic shock wave generator or source to emit pressure pulses or acoustic shock waves directed toward the substance to impinge the substance with pressure pulses or shock waves having a low energy density in the range of 0.00001 mJ/mm<2 >to 1.0 mJ/mm<2>; the pressure pulse being an acoustic pulse which includes several cycles of positive and negative pressure, wherein the pressure pulse has an amplitude of the positive part of such a cycle should be above 0.1 MPa and the time duration of the pressure pulse is from below a microsecond to about a second, rise times of the positive part of the first pressure cycle in the range of nano-seconds (ns) up to some milli-seconds (ms), the acoustic shock waves being very fast pressure pulses having amplitudes above 0.1 MPa and rise times of the amplitude being below 100's of ns, the duration of the shock wave is typically below 1-3 micro-seconds ( $\mu$ s) for the positive part of a cycle and typically above some micro-seconds for the negative part of a cycle; and

subjecting the cellular substance to convergent, divergent, planar or near planar acoustic shock waves or pressure pulses in the absence of a focal point impinging the substance stimulating a cellular response in the absence of creating cavitation bubbles evidenced by not experiencing the sensation of cellular hemorrhaging caused by the emitted waves or pulses in the substance wherein the cellular substance is positioned within a path of the emitted shock waves or pressure pulses and away from any localized geometric focal volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the cellular substance or beyond the cellular substance thereby passing the emitted waves through the cellular substance while avoiding having any localized focal point within the cellular substance wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an

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energy density value ranging as low as 0.00001 mJ/mm<2 >to a high end of below 1.0 mJ/mm<2>.				
20. The method of stimulating a substance of claim 19 wherein the shock waves stimulate the stem cells enhancing replication.				
<b>DN0079 DIV2</b> 12/246.583 filed 10/07/2008 Pub No. 2009/0036803A1 Patent No. 7.905.845				
Status: Granted 03/15/2011 Maint Fee: all naid				
Status. Granicu 05/15/2011 Manit Fee. an paid				
<ol> <li>The method of stimulating a cellular substance wherein the cellular substance is a tissue having cells and the tissue is either part of an organ or the entire organ of a mammal comprises the steps of: treating the cellular substance; activating an acoustic shock wave generator or source to emit pressure pulses or acoustic shock waves directed toward the</li> </ol>				
substance to impinge the substance with pressure pulses or shock waves having a low energy density in the range of 0.00001				
mJ/mm<2 >to 1.0 mJ/mm<2>; the pressure pulse being an acoustic pulse which includes several cycles of positive and negative				
pressure, wherein the pressure pulse has an amplitude of the positive part of such a cycle should be above 0.1 MPa and the time				
duration of the pressure pulse is from below a microsecond to about a second, rise times of the positive part of the first pressure				
cycle in the range of nano-seconds (ns) up to some milli-seconds (ms), the acoustic shock waves being very fast pressure pulses				
twoically below 1-3 micro-seconds (us) for the positive part of a cycle and twoically above some micro-seconds for the pegative				
part of a cycle: and				
subjecting the cellular substance to convergent, divergent, planar or near planar acoustic shock waves or pressure pulses in the				
absence of a focal point impinging the substance stimulating a cellular response in the absence of creating cavitation bubbles				
evidenced by not experiencing the sensation of cellular hemorrhaging caused by the emitted waves or pulses in the substance				
wherein the cellular substance is positioned within a path of the emitted shock waves or pressure pulses and away from any				
localized geometric focal volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either				
nave no geometric focal volume or point or have a focal volume or point anead of the cellular substance or beyond the cellular substance while avoiding having any localized focal point within				
the cellular substance wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or pear planar and the				
pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave				
generation having an energy density value ranging as low as $0.00001 \text{ mJ/mm} < 2 > \text{to a high end of below } 1.0 \text{ mJ/mm} < 2 >.$				
2. The method of stimulating a substance of claim 1 wherein the emitted shock waves are divergent or near planar.				
3. The method of stimulating a substance of claim 1 wherein the emitted shock waves are convergent having a geometric focal				
volume or point at a distance of at least X from the generator or source, the method further comprising positioning the substance				
at a distance less than the distance X from the source.				
4. The method of stimulating a substance of claim 1 wherein the mammal is a human or an animal.				
5. The method of stimulating a substance of claim 1 wherein the substance is skin exhibiting one or more skin sarcomas.				
6. The method of stimulating a substance of claim 1 wherein the substance is subcutaneous tissue.				

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7. The method of	f stimulating a substance of	f claim 1 wherein the sub	ostance exhibits cellulitis or other subcutaneous infections.		
8. The method of the step of treating	f stimulating a substance of ng wounds.	f claim 1 wherein the ste	p of subjecting the substance to acoustic shock waves includes		
9. The method o	f stimulating a substance of	f claim 8 wherein the wo	ound is a burn.		
,, , , , , , , , , , , , , , , , , , ,					
10. The method of includes the step	of stimulating a substance of treating ulcers.	of claim 1 wherein the st	ep of subjecting the substance to acoustic shock waves		
11. The method of stimulating a substance wherein the substance is a tissue having cells and the tissue is either a part or all of the skin or the subcutaneous tissue underlying the skin, or the combination of the skin and subcutaneous tissue of a mammal comprises the steps of:					
activating an acc	oustic shock wave generato	r or source to emit press	are pulses or acoustic shock waves directed toward the		
substance to imp	binge the substance with pre	essure pulses or shock w	aves having a low energy density in the range of 0.00001		
mJ/mm<2 >to 1.	.0 mJ/mm<2>; the pressure	pulse being an acoustic	pulse which includes several cycles of positive and negative		
pressure, wherein	n the pressure pulse has an	amplitude of the positive	e part of such a cycle should be above 0.1 MPa and the time		
duration of the p	ressure pulse is from belov	v a microsecond to about	a second, rise times of the positive part of the first pressure		
cycle in the rang	e of nano-seconds (ns) up t	to some milli-seconds (m	ns), the acoustic shock waves being very fast pressure pulses		
having amplitude	es above 0.1 MPa and rise	times of the amplitude be	eing below 100's of ns, the duration of the shock wave is		
typically below 1	1-3 micro-seconds (µs) for	the positive part of a cyc	ele and typically above some micro-seconds for the negative		
part of a cycle; a	ind				
subjecting the ce	llular substance to converg	ent, divergent, planar or	near planar acoustic shock waves or pressure pulses in the		
absence of a foca	al point impinging the subs	tance stimulating a cellu	lar response in the absence of creating cavitation bubbles		
evidenced by not	evidenced by not experiencing the sensation of cellular hemorrhaging caused by the emitted waves or pulses in the substance				
wherein the cellular substance is positioned within a path of the emitted shock waves or pressure pulses and away from any					
localized geometric local volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point shead of the callular substance or hervord the callular					
nave no geometric local volume or point or nave a local volume or point ahead of the cellular substance or beyond the cellular substance thereby passing the emitted wayes through the cellular substance while avoiding having any localized focal point within					
the cellular subst	tance wherein the emitted r	pressure pulses or shock	waves are convergent, divergent, planar or near planar and the		
pressure pulse sh	lock wave generator or sou	rce is based on electro-h	ydraulic, electromagnetic, piezoceramic or ballistic wave		
generation havin	ig an energy density value i	ranging as low as 0.0000	1 mJ/mm<2 >to a high end of below 1.0 mJ/mm<2>.		
-			-		
12. The method	of stimulating a substance of	of claim 11 wherein the	substance is skin and subcutaneous tissue.		

13. The method of stimulating a substance of claim 12 wherein the skin and subcutaneous tissue exhibit cellulitis.

14. The method of stimulating a substance of claim 11 wherein the substance includes a wound or scar tissue.

15. The method of stimulating a substance of claim 11 wherein the substance includes acne.

16. The method of stimulating a substance of claim 11 wherein the substance is skin exhibiting surface irregularities and wherein the exposure to the acoustic shock waves stimulates a skin smoothing reaction.

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17. The method of stimulating a substance of claim 11 wherein the substance is skin and subcutaneous tissue having hair follicle	s,			
wherein the exposure to the acoustic shock waves sumulates hair growth.				
<b>DN0079 DIV3</b> 12/246,599 filed 10/07/2008 Pub No. 2009/0030352A1 Patent No. 7.883,482				
Status: Granted 02/08/2011 Maint Fee: all paid				
1. A method of reducing or eliminating a mass within a cellular substance wherein the cellular substance is	а			
tissue having cells and the tissue is either part of an organ or the entire organ of a human or animal				
comprises the steps of:				
detecting the presence of said mass in said substance;				
localizing said mass generally within said substance;				
treating the cellular substance;				
activating an acoustic shock wave generator or source to emit pressure pulses or acoustic shock waves				
directed toward the substance to impinge the substance with pressure pulses or shock waves having a low				
energy density in the range of 0.00001 mJ/mm<2 >to 1.0 mJ/mm<2>; the pressure pulse being an acoustic				
pulse which includes several cycles of positive and negative pressure, wherein the pressure pulse has an				
amplitude of the positive part of such a cycle should be above 0.1 MPa and the time duration of the pressure	e			
pulse is from below a microsecond to about a second, rise times of the positive part of the first pressure				
cycle in the range of nano-seconds (ns) up to some milli-seconds (ms), the acoustic shock waves being ver	y			
fast pressure pulses having amplitudes above 0.1 MPa and rise times of the amplitude being below 100's of				
ns, the duration of the shock wave is typically below 1-3 micro-seconds ( $\mu$ s) for the positive part of a cycle				
and typically above some micro-seconds for the negative part of a cycle;				
subjecting the cellular substance to convergent, divergent, planar or near planar acoustic shock waves or				
pressure pulses in the absence of a focal point impinging the substance stimulating a cellular response in tr	e			
absence of creating cavitation bubbles evidenced by not experiencing the sensation of certain hemorrhagin	g			
caused by the emitted waves or pulses in the substance wherein the central substance is positioned within rath of the emitted shock waves or pressure pulses and away from any localized geometric focal values	1			
pain of the emitted shock waves of pressure pulses and away from any localized geometric local volume of				
geometric focal volume or point or have a focal volume or point should of the collular substance or havend				
the cellular substance thereby passing the emitted wayes through the cellular substance while avoiding				
having any localized focal point within the cellular substance wherein the emitted pressure pulses or shock				
waves are convergent divergent planar or near planar and the pressure pulse shock wave generator or				
source is based on electro-hydraulic electromagnetic niezoceramic or ballistic wave generation having an				
energy density value ranging as low as 0 00001 mJ/mm<2 > to a high end of below 1.0 mJ/mm<2> and				
stimulating said substance by subjecting low energy divergent, planar or near planar acoustical waves or				
convergent focused acoustical waves wherein a geometric focal point or volume of the focused waves is no	ot			
focused at the mass at least for a predetermined time during the step of stimulating the substance.				

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2. The method	d of reducing or elimin	ating a mass within	a substance of claim 1 further comprises the step of		
focusing the g the substance	geometric focal volume has been previously st	e or point of converg imulated by the low	ent high energy acoustical waves on the mass after energy acoustical waves.		
3. The method convergent hi	d of reducing or elimin gh energy acoustical w	nating a mass within waves on the mass ge	a substance of claim 2 wherein the step of focusing nerates cellular trauma within said mass.		
4. The method essentially rup	d of reducing or elimin ptures cells within said	nating a mass within I mass thereby reduct	a substance of claim 3 wherein said cellular traumaing or eliminating said mass.		
5. The method of reducing or eliminating a mass within a substance of claim 1 wherein the step of stimulating said substance activates at least some of said cells in proximity to said mass, said cells being enriched with mass destroying agents.					
6. The method of reducing or eliminating a mass within a substance of claim 1 wherein said mass destroying agents include one or more drugs, chemicals or genetic therapeutic agents.					
7. The method of reducing or eliminating a mass within a substance of claim 1 further comprises the step of: surgically removing at least a portion of the mass.					
8. The method of reducing or eliminating a mass within a substance of claim 1 further comprises the step of: administering one or more drugs to be delivered to the substance or the mass within said substance.					
9. The method irradiating sai	d of reducing or elimin d mass.	ating a mass within	a substance of claim 1 further comprises the step of:		
10. The method of reducing or eliminating a mass within a substance of claim 1 wherein the organ is a brain, heart, kidney, liver, skin or other soft tissued organ.					
11. The method of reducing or eliminating a mass within a substance of claim 1 wherein the substance is a portion of a skeletal system, a tooth or a gum or other hard tissued substance.					
12. The metho	12. The method of claim 1 wherein the mass is a tumor.				
13. The metho wealthy or oth	od of stimulating a sub herwise enriched cells	stance of claim 1 wh to fight tumor cells v	erein the step of stimulating includes stimulating vithin the tissue.		

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14. The method of stimulating a substance of claim 1 further comprises a step of administering one or more antibiotics or other drugs to a blood stream within the substance, a blood stream being stimulated by the acoustic shock waves.

15. The method of preventive shock wave therapy comprises the steps of:

identifying an at risk patient, the patient having an at risk tissue;

treating the cellular substance;

activating an acoustic shock wave generator or source to emit pressure pulses or acoustic shock waves directed toward the substance to impinge the substance with pressure pulses or shock waves having a low energy density in the range of 0.00001 mJ/mm<2 >to 1.0 mJ/mm<2>; the pressure pulse being an acoustic pulse which includes several cycles of positive and negative pressure, wherein the pressure pulse has an amplitude of the positive part of such a cycle should be above 0.1 MPa and the time duration of the pressure pulse is from below a microsecond to about a second, rise times of the positive part of the first pressure cycle in the range of nano-seconds (ns) up to some milli-seconds (ms), the acoustic shock waves being very fast pressure pulses having amplitudes above 0.1 MPa and rise times of the amplitude being below 100's of ns, the duration of the shock wave is typically below 1-3 micro-seconds ( $\mu$ s) for the positive part of a cycle and typically above some micro-seconds for the negative part of a cycle;

subjecting the cellular substance to convergent, divergent, planar or near planar acoustic shock waves or pressure pulses in the absence of a focal point impinging the substance stimulating a cellular response in the absence of creating cavitation bubbles evidenced by not experiencing the sensation of cellular hemorrhaging caused by the emitted waves or pulses in the substance wherein the cellular substance is positioned within a path of the emitted shock waves or pressure pulses and away from any localized geometric focal volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the cellular substance or beyond the cellular substance thereby passing the emitted waves through the cellular substance while avoiding having any localized focal point within the cellular substance wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generation having an energy density value ranging as low as 0.00001 mJ/mm<2 >to a high end of below 1.0 mJ/mm<2>; and subjecting the at risk tissue to shock waves to stimulate tissue repair.

16. The method of preventive shock wave therapy of claim 15 wherein the step of stimulating includes stimulating wealthy or otherwise enriched cells to fight tumor cells within the tissue.

17. The method of preventive shock wave therapy of claim 15 wherein the step of identifying an at risk patient includes one or more indications of risk based on family history, genetic disposition, physical condition, or blood or tissue analysis.

#### **TRT USPTO Patent Filings** Docket **USPTO** Serial Filing Date Title Number (day/month/year) Number 18. The method of preventive shock wave therapy of claim 15 further comprises the step of testing the at risk tissue to establish measured baseline condition pre shock wave therapy. 19. The method of preventive shock wave therapy of claim 18 further comprises the step of post shockwave therapy testing the treated at risk tissue for comparison to the baseline condition. Pressure Pulse/Shock Wave Therapy Methods for 0090 09/29/2005 11/238,731 Organs Publication Date: Feb 16, 2006 Publication No. US 2006/0036195 A1 Patent No. 7,507,213 Grant Date: 03/24/2009 Status: Maint Fee: all paid The method of stimulating an organ comprises the steps of providing an at least partially exposed or direct access portal to an organ, activating an acoustic shock wave generator or source to emit acoustic shock waves; and subjecting the organ to the acoustic shock waves stimulating said organ wherein the organ is positioned within a non obstructed path of the emitted shock waves. A Treatment or Pre-Treatment for Radiation / 0091 11/238,524 09/29/2005 Chemical Exposure Publication Date: Oct 11, 2007 Publication No. US 2007/0239072 A1 Patent No. 7,537,572 Grant Date: 05/26/2009 Status: Maint Fee: all paid A method of treatment for a tissue organ or entire body of a patient prior to or after exposure to chemicals or radiation or both comprises the steps of activating an acoustic shock wave generator or source to emit acoustic shock waves; and subjecting

the tissue, organ or entire body to the acoustic shock waves stimulating said tissue, organ or body wherein the tissue, organ or body is positioned within a path of the emitted shock waves.

1. An invasive method of stimulating an organ having tissue made of cellular matter comprises the steps of: exposing an organ by an invasive or open surgical procedure to provide an at least partial exposed organ or an access portal to an organ:

activating an acoustic pressure pulse shock wave generator or source to emit a pressure pulse or acoustic shock waves from a shock wave head, the pressure pulse being an acoustic pulse which includes several cycles of positive and negative pressure,

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wherein the pres	sure pulse has an amplitude	e of the positive part of s	such a cycle should be above 0.1 MPa and the time duration of		
the pressure puls	e is from below a microsec	cond to about a second, r	ise times of the positive part of the first pressure cycle in the		
range of nano-se	conds (ns) up to some milli	i-seconds (ms), the acou	stic shock waves being very fast pressure pulses having		
amplitudes above	e 0.1 MPa and rise times of	f the amplitude being be	low 100's of ns, the duration of the shock wave is typically		
below 1-3 micro	-seconds (µs) for the positiv	ve part of a cycle and ty	pically above some micro-seconds for the negative part of a		
cycle; and where	in the shock wave head is a	directed to enter either th	ne access portal or an opening wherein the organ is at least		
partially exposed	l to permit entry of the shoo	ck wave head directly to	the organ; and		
subjecting the or	gan to convergent, divergen	nt, planar or near planar	acoustic shock waves or pressure pulses in the absence of a		
focal point impir	iging the organ stimulating	a cellular response in th	e absence of creating cavitation bubbles evidenced by not		
experiencing the	sensation of hemorrhaging	caused by the emitted w	waves or pulses in the tissue of said organ wherein the organ is		
positioned within	n an unobstructed path of th	ne emitted shock waves	or pressure pulses without interfering tissue or skeletal bone		
mass; and away	from any localized geometr	ric focal volume or point	t of the emitted shock waves wherein the emitted shock waves		
or pressure pulse	s either have no geometric	focal volume or point of	r have a focal volume or point ahead of the tissue or beyond		
the tissue thereby	y passing the emitted waves	s or pulses through the t	issue while avoiding having any localized focal point within		
the tissue of the organ wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the					
pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave					
generation having an energy density value ranging as low as 0.00001 mJ/mm<2 >to a high end of below 1.0 mJ/mm<2>; and					
wherein the organ is a heart, a liver or a kidney or a portion of a brain or any other organ or portion thereof; and wherein the shock					
wave head is inte	wave head is internally directed in contact or near contact with the exposed organ directly or through a coupling gel or oil or				
coupling mediun	n.				

2. The invasive method of stimulating an organ of claim 1 wherein the emitted pressure pulses or shock waves are convergent having one or more geometric focal volumes or points at a distance of at least X from the generator or source, the method further comprising positioning the organ at a distance at or less than the distance X from the source.

3. The invasive method of stimulating an organ of claim 1 wherein the organ is a heart.

4. The invasive method of stimulating an organ of claim 1 wherein the organ is a brain.

5. The invasive method of stimulating an organ of claim 1 wherein the organ is a liver.

6. The invasive method of stimulating an organ of claim 1 wherein the organ is a kidney.

7. The invasive method of stimulating an organ of claim 1 wherein the organ is a part of the vascular system.

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8. The invasive r	nethod of stimulating a	n organ of claim 1 wherein	the organ is a part of the nervous system.	
9. The invasive r	nethod of stimulating a	n organ of claim 1 wherein t	the organ is a part of the urinary or reproductive system.	
10. The invasive	method of stimulating	an organ of claim 1 whereir	the organ is a part of the lymph node or pituitary systems.	
11. The invasive shock waves inc	method of stimulating ludes the step of treatin	a organ of claim 1 wherein g cirrhosis of the liver.	the step of subjecting the organ to pressure pulses or acoustic	
12. The invasive shock waves inc within said organ	12. The invasive method of stimulating an organ of claim 1 wherein the step of subjecting the organ to pressure pulses or acoustic shock waves includes killing bacteria by destroying bacterial cell membranes or stimulating a biological defense mechanism within said organ by exposure to the acoustic shock waves.			
13. The invasive method of stimulating an organ of claim 1 further comprises a step of administering one or more antibiotics or other drugs to a blood stream within the organ, the organ being stimulated by the pressure pulses or acoustic shock waves wherein the drugs can work faster and be more efficient.				
14. The invasive transplanting the	14. The invasive method of stimulating an organ of claim 1 further comprises the step of: transplanting the organ from a donor to a patient.			
15. The invasive method of claim 14 wherein the organ is exposed to pressure pulses or shock waves after being transplanted into a patient.				
16. The invasive method of claim 14 wherein the organ is exposed to pressure pulses or shock waves prior to being transplanted into a patient.				
0092	11/239,251	09/29/2005	A Therapeutic Treatment for Infertility or Impotency	
Publication D Grant Date: 1	Publication Date: May 11, 2006Publication No.US 2006/0100552 A1Patent No.7,601,127Grant Date: 10/13/2009Status: Maint Fee: all paid			
The method of tweetwart for a conital tions or name dusting some for infortility or investors. I want to the				

The method of treatment for a genital tissue or reproductive organ of an infertility or impotence diagnosed patient is disclosed. The treatment has the steps of activating an acoustic shock wave generator or source to emit acoustic shock waves; and subjecting the genital tissue, reproductive organ or the entire reproductive region of the body to the acoustic

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shock wav	es stimulating said tissue, o	organ or body wherein th	e tissue, organ or body is positioned within a path of the		
emitted she	ock waves. The emitted sh	lock waves can be conve	rgent, divergent, planar or near planar.		
1.	The method of stimulation	n of a genital tissue or rep	productive organ of an infertility or impotence diagnosed		
patient cor	nprising the steps of:				
activating	an acoustic shock wave ger	nerator or source to emit	pressure pulses including but not limited to very fast pressure		
pulses call	ed acoustic shock waves di	irected toward the genital	l tissue or reproductive organ to impinge the genital tissue or		
reproductiv	ve organ with pressure puls	ses or shock waves havin	g a low energy density in the range of 0.000001 mJ/mm<2 $\ge$ to		
1.0 mJ/mm	1<2>; the pressure pulse be	ing an acoustic pulse wh	ich includes several cycles of positive and negative pressure,		
wherein th	e pressure pulse has an am	plitude of the positive pa	rt of such a cycle above 0.1 MPa and the time duration of the		
pressure pr	ulse cycle is from a micros	econd to about a second,	rise times to the peak pressure of the positive part of the first		
pressure cy	ycle being in the range of n	ano-seconds (ns) up to n	nilli-seconds (ms), the acoustic shock waves being very fast		
pressure pr	ulses having amplitudes of	the positive part of the c	ycle similarly above 0.1 MPa but with rise times to a peak		
positive pr	essure of the positive part of	of the amplitude being be	elow 100 ns, the duration of the shock wave is below 3 micro-		
seconds (µ	s) for the positive part of a	cycle and above 3 micro	p-seconds for the negative part of a cycle;		
subjecting	the genital tissue, reproduc	ctive organ or the entire r	reproductive region of the body to the convergent, divergent,		
planar or n	ear planar acoustic shock v	waves or pressure pulses	in the absence of a focal point impinging the genital tissue or		
reproductiv	ve organ stimulating a cellu	ular response in the abser	nce of creating cavitation bubbles evidenced by not		
experienci	ng the sensation of cellular	hemorrhaging caused by	the emitted waves or pulses in the genital tissue or		
reproductiv	ve organ wherein the genita	al tissue or reproductive	organ is positioned within a path of the emitted shock waves or		
pressure pr	ulses and away from any lo	ocalized geometric focal	volume or point of the emitted shock waves wherein the		
emitted she	ock waves or pressure puls	es either have no geomet	ric focal volume or point or have a focal volume or point		
ahead of th	ahead of the genital tissue or reproductive organ or beyond the genital tissue or reproductive organ thereby passing the				
emitted wa	emitted waves through the genital tissue or reproductive organ while avoiding having any localized focal point within the				
genital tiss	genital tissue or reproductive organ wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or				
near plana	near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic,				
piezoceran	piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm<2 >to a high				
end of belo	end of below 1.0 mJ/mm<2>; and				
stimulating	stimulating said tissue, organ or body wherein the tissue, organ or body is positioned within a path of the emitted shock				

stimulating said tissue, organ or body wherein the tissue, organ or body is positioned within a path of the emitted shock waves removed from any focal point of the emitted acoustic shock wave.

2. The method of stimulation of claim 1 wherein the emitted shock waves are convergent having one or more geometric focal points at a distance of at least X from the generator or source, the method further comprising positioning the genital tissue or reproductive organ at a distance less than the distance X from the source to position the one or more focal points

# **TRT USPTO Patent Filings** Docket **USPTO** Serial Filing Date Title Number Number (day/month/year) beyond the treatment site of the genital tissue or reproductive organ. 3. The method of stimulation of claim 1 further comprising the step of: administering one or more medicaments prior, during or after subjecting the patient to acoustic shock waves. 4. The method of stimulation of claim 1 further comprising the step of: testing the sperm count or viability of the male infertility or impotence diagnosed patient after exposure to one or more acoustic shock wave stimulations. 5. The method of stimulation of claim 1 further comprising the step of: testing the oocyte viability or count of the female infertility or impotence diagnosed patient after one or more acoustic shock wave stimulations. 6. The method of stimulation of claim 1 further comprising the step of: subjecting a genital tissue or reproductive organ to a surgical procedure to remove or repair some or all of any defects or degenerative genital tissues or reproductive organs. 7. The method of stimulation of claim 1 wherein the treated genital tissue or reproductive organ has an indication of one or more pathological conditions including: infertility of oocyte or sperm, impotency, premenstrual syndrome, PMDD, stress urinary incontinence, polycystic ovarian disease, endometriosis, endometrial cancer, infertility, hormone imbalance, and tissue subjected to a variety of perturbations including hormone replacement therapy or chemical contraception. 8. The method of stimulation for a genital tissue or reproductive organ of an infertility or impotence diagnosed patient of claim 1 where the emitted shock waves have an energy density of less than 0.2 mJ/mm<2>. 9. The method of stimulation for a genital tissue or reproductive organ of an infertility or impotence diagnosed patient of claim 1 where the emitted shock waves have an energy density in the range of 0.0001 to 0.1 mJ/mm < 2>. 10. The method of stimulation of a genital tissue or reproductive organ of an infertility or impotence diagnosed patient comprising the steps of:

activating an acoustic shock wave generator or source to emit pressure pulses including but not limited to very fast pressure pulses called acoustic shock waves directed toward the genital tissue or reproductive organ to impinge the genital tissue or reproductive organ with pressure pulses or shock waves having a low energy density in the range of 0.000001 mJ/mm<2>to

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1.0 mJ/mm	1<2>; the pressure pulse be	ing an acoustic pulse wh	ich includes several cycles of positive and negative pressure,		
wherein the	e pressure pulse has an amj	plitude of the positive pa	rt of such a cycle above 0.1 MPa and the time duration of the		
pressure pu	alse cycle is from a microse	econd to about a second,	rise times to the peak pressure of the positive part of the first		
pressure cy	cle being in the range of n	ano-seconds (ns) up to n	nilli-seconds (ms), the acoustic shock waves being very fast		
pressure pu	ilses having amplitudes of	the positive part of the c	ycle similarly above 0.1 MPa but with rise times to a peak		
positive pro	essure of the positive part of	of the amplitude being be	elow 100 ns, the duration of the shock wave is below 3 micro-		
seconds (µ	s) for the positive part of a	cycle and above 3 micro	p-seconds for the negative part of a cycle;		
subjecting	the genital tissue, reproduc	ctive organ or the entire r	reproductive region of the body to the convergent, divergent,		
planar or n	ear planar acoustic shock v	vaves or pressure pulses	in the absence of a focal point impinging the genital tissue or		
reproductiv	ve organ stimulating a cellu	alar response in the abser	nce of cellular damage evidenced by not experiencing the		
sensation o	of cellular hemorrhaging ca	used by the emitted wav	es or pulses in the genital tissue or reproductive organ wherein		
the genital	tissue or reproductive orga	in is positioned within a	path of the emitted shock waves or pressure pulses and away		
from any lo	ocalized geometric focal vo	olume or point of the em	itted shock waves wherein the emitted shock waves or pressure		
pulses eith	er have no geometric focal	volume or point or have	a focal volume or point ahead of the genital tissue or		
reproductiv	ve organ or beyond the gen	ital tissue or reproductiv	e organ thereby passing the emitted waves through the genital		
tissue or re	tissue or reproductive organ while avoiding having any localized focal point within the genital tissue or reproductive organ				
wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse					
shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation					
having an energy density value ranging as low as 0.00001 mJ/mm<2 >to a high end of below 1.0 mJ/mm<2>; and					
stimulating	stimulating said tissue, organ or body wherein the tissue, organ or body is positioned within a path of the emitted shock				
waves rem	oved from any focal point	of the emitted acoustic sl	hock wave.		

11. The method of stimulation of claim 10 wherein the emitted shock waves are convergent having one or more geometric focal points at a distance of at least X from the generator or source, the method further comprising positioning the genital tissue or reproductive organ at a distance less than the distance X from the source to position the one or more focal points beyond the treatment site of the genital tissue or reproductive organ.

12. The method of stimulation of claim 10 further comprising the step of: administering one or more medicaments prior, during or after subjecting the patient to acoustic shock waves.

13. The method of stimulation of claim 10 further comprising the step of: testing the sperm count or viability of the male infertility or impotence diagnosed patient after exposure to one or more acoustic shock wave stimulations.

### **TRT USPTO Patent Filings** Docket **USPTO** Serial Filing Date Title Number Number (day/month/year) 14. The method of stimulation of claim 10 further comprising the step of: testing the oocyte viability or count of the female infertility or impotence diagnosed patient after one or more acoustic shock wave stimulations. 15. The method of stimulation of claim 10 further comprising the step of: subjecting a genital tissue or reproductive organ to a surgical procedure to remove or repair some or all of any defects or degenerative genital tissues or reproductive organs. 16. The method of stimulation of claim 10 wherein the stimulated genital tissue or reproductive organ has an indication of one or more pathological conditions including: infertility of oocyte or sperm, impotency, premenstrual syndrome, PMDD, stress urinary incontinence, polycystic ovarian disease, endometriosis, endometrial cancer, infertility, hormone imbalance, and tissue subjected to a variety of perturbations including hormone replacement therapy or chemical contraception. 17. The method of stimulation for a genital tissue or reproductive organ of an infertility or impotence diagnosed patient of claim 10 where the emitted shock waves have an energy density of less than 0.2 mJ/mm<2>. 18. The method of stimulation for a genital tissue or reproductive organ of an infertility or impotence diagnosed patient of claim 10 where the emitted shock waves have an energy density in the range of 0.00001 to 0.1 mJ/mm<2>. Germicidal Method for Eradicating or Preventing 0093 11/238.551 09/29/2005 the Formation of Biofilms Publication Date: Oct 11, 2007 Publication No. US 2007/0239073 A1 Patent No: 7,497,834 Grant Date: 03/03/2009 Status: Maint Fee: all paid A method of treatment for a tissue organ or entire body of a patient prior to or after exposure to a biofilm infection comprises the steps of activating an acoustic shock wave generator or source to emit acoustic shock waves; and subjecting the infected tissue, organ or entire body to the acoustic shock waves stimulating said tissue, organ or body wherein the tissue, organ

or body is positioned within a path of the emitted shock waves.

1. The method of treating a host diagnosed with one or more biofilms, the biofilms having an outer barrier and an underlying colony of organisms comprises the steps of: receiving a host diagnosed with one or more biofilms;

## **TRT USPTO Patent Filings** Docket **USPTO** Serial Filing Date Title Number Number (day/month/year) locating a region or location of a resident biofilm; activating a pressure pulse or acoustic shock wave generating source, the pressure pulse being an acoustic pulse which includes several cycles of positive and negative pressure, wherein the pressure pulse has an amplitude of the positive part of such a cycle should be above 0.1 MPa and the time duration of the pressure pulse is from below a microsecond to about a second, rise times of the positive part of the first pressure cycle in the range of nano-seconds (ns) up to some milli-seconds (ms), the acoustic shock waves being very fast pressure pulses having amplitudes above 0.1 MPa and rise times of the amplitude being below 100's of ns, the duration of the shock wave is typically below 1-3 micro-seconds ([mu]s) for the positive part of a cycle and typically above some micro-seconds for the negative part of a cycle; emitting pressure pulses or acoustic shock waves using focused pulses or shock waves at an energy density up to 1.0 mmJ/mm<2> ; with or without creating cavitation bubbles in the location or region of the resident biofilm, the focused pulses or shock waves having a focal volume or point on the location or region of the resident biofilm or using unfocused pulses or shock waves and away from any localized geometric focal volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the location or region of a resident biofilm or beyond the location or region of a resident biofilm thereby passing the emitted waves or pulses through the location or region of a resident biofilm while avoiding having any localized focal point within the location or region of a resident biofilm wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as $0.00001 \text{ mJ/mm} \le 2 > \text{ to a high end of below } 1.0 \text{ mJ/mm} \le 2 > \text{; and}$ directing the pulses or shock waves to impinge the resident biofilm to destroy, fracture, fragment or otherwise open the outer barrier structure of the resident biofilm. 2. The method of claim 1 further comprises the step of: stimulating cells of a host to initiate a cellular response within the host when the host is a living being with organs and tissues having a cellular structure, the stimulated cells assist in absorbing or otherwise eradicating the biofilm. 3. The method of claim 1 wherein the emitted pressure pulses or shock waves impinge the underlying organisms destroying or rupturing their outer membranes to germicidally kill the organisms. 4. The method of claim 1 further comprises the step of: administering one or more drugs, antibiotics or other medication to the host.

5. The method of claim 1 further comprises the step of: surgically exposing the region or location of the resident biofilm.

6. The method of treatment of claim 1 wherein the emitted shock waves are convergent, divergent, planar or near planar.

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7. The method of treatment of claim 1 wherein the emitted pressure pulses or shock waves are convergent having one or more geometric focal volumes of points at a distance of at least X from the generator or source, the method further comprising positioning the organ at a distance at or less than the distance X from the source.			
8. The method of treatment of claim 1 further comprises the step of: administering one or more medicaments prior, during or after subjecting the patient to pressure pulses or acoustic shock waves.			
9. The method of treatment of claim 1 further comprises the step of: subjecting a tissue or organ to a surgical procedure to remove some or all of a biofilm growth.			
10. The method of claim 1 wherein the region or location is part of a system including the cardiovascular, urological, reproductive, digestive, intestinal, neurological or periodontal.			
11. The method of claim 1 wherein the pathological or degenerative condition is a leaking value in a heart.			
12. The method of claim 1 wherein the pathological condition is a degenerative gum condition.			
13. The method of claim 1 wherein the pathological condition is an infection.			
14. The method of claim 1 wherein the infection is generally non-responsive to medications.			
15. The method of preventively treating a patient at risk of developing a biofilm and becoming a host; comprises the steps of: identifying an at risk patient with a pathological or degenerative condition susceptible to the generation of a biofilm; treating the at risk patient by:			
activating a pressure pulse or acoustic shock wave generating source, the pressure pulse being an acoustic pulse which includes several cycles of positive and negative pressure, wherein the pressure pulse has an amplitude of the positive part of such a cycle should be above 0.1 MPa and the time duration of the pressure pulse is from below a microsecond to about a second, rise times of the presitive part of the first pressure pulse in the pressure pulse is from below a microsecond to about a second, rise times of			
the positive part of the first pressure cycle in the range of nano-seconds (ns) up to some milli-seconds (ms), the acoustic shock waves being very fast pressure pulses having amplitudes above 0.1 MPa and rise times of the amplitude being below 100's of ns, the duration of the shock wave is typically below 1-3 micro-seconds ([mu]s) for the positive part of a cycle and typically above some micro-seconds for the negative part of a cycle; and			

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mmJ/mm<2 > ar	nd directing the pulses	or shock waves to impinge a	n area of the treatment region or location; in the absence of a
focal point impir	nging the treatment reg	ion or location to stimulate a	a cellular response in the absence of creating cavitation bubbles
in the location of	region evidenced by 1	not experiencing the sensatio	n of hemorrhaging caused by the emitted waves or pulses
wherein the area	of the treatment region	n or location is away from ar	ny localized geometric focal volume or point of the emitted
shock waves wh	erein the emitted shock	waves or pressure pulses ei	ther have no geometric focal volume or point or have a focal
volume or point	ahead of the location of	r region of treatment or beyo	ond the location or region of treatment thereby passing the
emitted waves of	r pulses through the loo	cation or region of treatment	while avoiding having any localized focal point within the
location or regio	n of treatment wherein	the emitted pressure pulses	or shock waves are convergent, divergent, planar or near
planar and the p	essure pulse shock wa	ve generator or source is bas	ed on electro-hydraulic, electromagnetic, piezoceramic or
ballistic wave ge	eneration having an energy	ergy density value ranging as	s low as 0.00001 mJ/mm $<$ 2 > to a high end of below 1.0
mJ/mm<2>.			
<ul> <li>16. The method of claim 15 wherein the region or location is part of a system including the cardiovascular, urological, reproductive, digestive, intestinal, neurological or periodontal tissue.</li> <li>17. The method of claim 15 wherein the pathological or degenerative condition is a leaking valve in a heart.</li> <li>18. The method of claim 15 wherein the pathological condition is a degenerative gum condition.</li> <li>19. The method of claim 15 wherein the pathological condition is an infection.</li> <li>20. The method of claim 19 wherein the infection is generally non-responsive to medications.</li> </ul>			
0094	11/238,730	09/29/2005	A Method of Treatment for and Prevention of Periodontal Disease
Publication D	ate: Feb 16, 2006	Publication No. US 20	006/0036194 A1 Patent No: 7,497,835
Grant Date: (	Grant Date: 03/03/2009 Status: Maint Fee: all paid		
The method of treatment for a periodontal tissue exhibiting a periodontal disease or periodontal condition in a diagnosed patient is disclosed. The method has the steps of activating an acoustic shock wave generator or source to emit acoustic shock waves; and subjecting the periodontal tissue, or the entire periodontal region of the patient to the acoustic shock waves stimulating said tissue, wherein the tissue is positioned within a path of the emitted shock waves. The method of			

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treatment may fu	treatment may further have the steps of administering one or more medicaments prior, during or after subjecting the patient to				
acoustic shock waves or testing the bacterial count or viability of the treated tissue or region of the diagnosed patient after					
exposure to one or more acoustic shock wave treatments; or subjecting a tissue or organ to a surgical procedure to remove or					
repair some or all of any defects or degenerative tissues. The method of treatment is for prevention of periodontal disease and					
may be used with	h debridement. The treatme	ent is particularly useful	in eradicating and inhibiting periodontal biofilms.		

1. The method of treatment for a periodontal tissue at risk for exhibiting a periodontal disease or periodontal condition in a diagnosed patient comprises the steps of:

receiving the diagnosed patient;

activating an acoustic shock wave or pressure pulse generator or source to emit pressure pulses or acoustic shock waves directed toward the periodontal tissue to impinge the periodontal tissue with shock waves or pressure pulses having a low energy density in the range of 0.00001 mJ/mm<2 > to 1.0 mJ/mm<2>, the pressure pulse being an acoustic pulse which includes several cycles of positive and negative pressure, wherein the pressure pulse has an amplitude of the positive part of such a cycle should be above 0.1 MPa and the time duration of the pressure pulse is from below a microsecond to about a second, rise times of the positive part of the first pressure cycle in the range of nano-seconds (ns) up to some milli-seconds (ms), the acoustic shock waves being very fast pressure pulses having amplitudes above 0.1 MPa and rise times of the amplitude being below 100's of ns, the duration of the shock wave is typically below 1-3 micro-seconds ([mu]s) for the positive part of a cycle and typically above some micro-seconds for the negative part of a cycle; and

subjecting the periodontal tissue, or the entire periodontal region of the patient to convergent, divergent, planar or near planar acoustic shock waves or pressure pulses stimulating said tissue, wherein the tissue is positioned within a path of the emitted shock waves or pressure pulses and away from any localized geometric focal volume or point of the emitted shock waves or pressure pulses wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the periodontal tissue or beyond the periodontal tissue thereby passing the emitted waves or pulses through the periodontal tissue while avoiding having any localized focal point within the periodontal tissue wherein the emitted pressure pulses or shock waves are convergent, divergent planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm < 2 > to a high end of below 1.0 mJ/mm < 2 >.

2. The method of treatment of claim 1 wherein the emitted shock waves or pressure pulses are convergent having one or more geometric focal volumes of points at a distance of at least X from the generator or source, the method further comprising positioning the periodontal tissue at a distance at or less than the distance X from the source.

3. The method of treatment of claim 1 further comprises the step of: administering one or more medicaments prior, during or after subjecting the patient to acoustic shock waves or pressure pulses.

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4. The method o testing the bacter acoustic shock w	f treatment of claim 1 furt rial count or viability of th vave or pressure pulse trea	her comprises the step of: e treated tissue or region tments.	of the diagnosed patient after exposure to one or more	
5. The method o subjecting the pe	f treatment of claim 1 furt priodontal tissue to a surgio	her comprises the step of: cal procedure to remove o	r repair some or all of any defects or degenerative tissues.	
<ul> <li>6. The method of treatment of claim 1 wherein the treated periodontal tissue has an indication of one or more pathological conditions including:</li> <li>a periodontal biofilm mass, periapical endodontic lesions, endo-perio lesions, gingivitis, inflammation of gingival tissue, periodontitis, progressive loss of ligament, cementum or alveolar bone support to teeth.</li> </ul>				
7. The method of claim 1 wherein the treated tissue has one or more conditions requiring treatment as follows: ridge augmentation for cosmetic, prosthetic or implantation of teeth; to assist osteoblastic and osteoclastic processes in orthodontia; regeneration of alveolar bone surrounding loose teeth implants regeneration of structures supporting the teeth including regeneration of structures supporting teeth including gingival, periodontal ligament, cementum and alveolar bone.				
8. The method o	f claim 1 wherein the treat	ment is for prevention of	periodontal disease.	
9. The method of claim 8 further comprises the step of: debridement.				
10. The method of claim 8 wherein the treatment further comprises the step of: destroying biofilm in or on the treated tissue or region.				
11. The method of claim 8 wherein the treated tissue or region activates or otherwise stimulates stem cells or release of cellular growth factors in the oral structure effecting a tissue repair or tissue regeneration.				
12. The method of treatment for a periodontal tissue at risk of or exhibiting a periodontal disease or periodontal condition in a diagnosed patient comprises the steps of: receiving the diagnosed patient;				
activating an acc toward the perio	oustic shock wave or press dontal tissue to impinge th	ure pulse generator or sou ne periodontal tissue with	rce to emit pressure pulses or acoustic shock waves directed shock waves having a low energy density in the range of	

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0.00001 mJ/mm	<2> to 1.0 mJ/mm $<2>$ , th	e pressure pulse being a	a acoustic pulse which includes several cycles of positive and	
negative pressure, wherein the pressure pulse has an amplitude of the positive part of such a cycle should be above 0.1 MPa and				
the time duration of the pressure pulse is from below a microsecond to about a second, rise times of the positive part of the first				
pressure cycle in the range of nano-seconds (ns) up to some milli-seconds (ms), the acoustic shock waves being very fast pressure				
pulses having amplitudes above 0.1 MPa and rise times of the amplitude being below 100's of ns, the duration of the shock wave				
is typically below 1-3 micro-seconds ([mu]s) for the positive part of a cycle and typically above some micro-seconds for the				
negative part of a cycle:				

subjecting the periodontal tissue, or the entire periodontal region of the patient to convergent, divergent, planar or near planar acoustic shock waves or pressure pulses stimulating said tissue in the absence of creating cavitation bubbles in the treated periodontal tissue, wherein the tissue is positioned within a path of the emitted shock waves or pressure pulses and away from any localized geometric focal volume or point of the emitted shock waves or pressure pulses wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the periodontal tissue or beyond the periodontal tissue thereby passing the emitted waves or pulses through the periodontal tissue while avoiding having any localized focal point within the periodontal tissue wherein the emitted pressure pulses or shock waves are convergent, divergent planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm<2 > to a high end of below 1.0 mJ/mm<2> ; and

wherein the periodontal tissue has cells and the shock waves or pressure pulses stimulate a cellular response in the tissue in the absence of cellular damage in the tissue caused by the shock waves or pressure pulses evidenced by the avoidance of localized hemorrhaging as a result of exposure to the emitted shock waves or pressure pulses.

13. The method of treatment of claim 12 wherein the tissue is gums.

14. The method of treatment of claim 12 wherein the step of subjecting the periodontal tissue to acoustic shock waves or pressure pulses stimulates at least some of said cells within said periodontal tissue to release or produce one or more of nitric oxygen (NO), vessel endothelial growth factor (VEGF), bone morphogenetic protein (BMP) or other growth factors.

15. The method of treatment of claim 12 further comprises the step of: administering one or more medicaments prior, during or after subjecting the patient to acoustic shock waves or pressure pulses.

16. The method of treatment of claim 12 further comprises the step of: testing the bacterial count or viability of the treated tissue or region of the diagnosed patient after exposure to one or more acoustic shock wave or pressure pulse treatments.

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A method of enhancing the regeneration of injured nerves has the step of administering an effective exposure of pressure pulses or acoustic shock waves in a pulse or wave pattern to the zone of injury of the nerve during the regeneration process. The inventive method may include enhancing the stimulation of neuronal cell growth or regeneration by administering an effective exposure of pressure pulses or acoustic shock waves in a pulse or wave pattern to stimulate neuronal cell growth or regeneration, wherein the administering of the treatment is applied to a patient who has a pathological condition where neuronal repair can be

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facilitated including peripheral nerve damage caused by injury or disease such as diabetes, brain damage associated with stroke, and for the treatment of neurological disorders related to neurodegeneration, including Parkinson's disease, Alzheimer's disease and amyotrophic lateral, sclerosis multiple sclerosis and disseminated sclerosis. The treatment is ideally suited for neural regeneration after a degenerative condition due to any neurological infections or any other pathological condition.

1. A method of treating a patient having injured or otherwise diseased nerves to stimulate by accelerating or initiating the regeneration and repair of injured or diseased nerves which comprises the step of:

treating the patient with injured or damaged nerves;

activating an acoustic pressure pulse shock wave generator or source to emit a pressure pulse or acoustic shock waves from a shock wave head, the pressure pulse being an acoustic pulse which includes several cycles of positive and negative pressure, wherein the pressure pulse has an amplitude of the positive part of such a cycle should be above 0.1 MPa and the time duration of the pressure pulse is from below a microsecond to about a second, rise times of the positive part of the first pressure cycle in the range of nano-seconds (ns) up to some milli-seconds (ms), the acoustic shock waves being very fast pressure pulses having amplitudes above 0.1 MPa and rise times of the amplitude being below 100's of ns, the duration of the shock wave is typically below 1-3 micro-seconds (µs) for the positive part of a cycle and typically above some micro-seconds for the negative part of a cycle; and

subjecting the nerves to convergent, divergent, planar or near planar acoustic shock waves or pressure pulses in the absence of a focal point impinging the nerves stimulating a cellular response in the absence of creating cavitation bubbles evidenced by not experiencing the sensation of hemorrhaging in the nerve caused by the emitted waves or pulses wherein the nerve is positioned within an unobstructed path of the emitted shock waves or pressure pulses; and away from any localized geometric focal volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the nerve or beyond the nerve thereby passing the emitted waves or pulses sthrough the nerve while avoiding having any localized focal point within the nerve wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm<2 >to a high end of below 1.0 mJ/mm<2; and by

administering an effective exposure of pressure pulses or acoustic shock waves in a pulse or wave pattern having a low energy density less than 1.0 mJ/mm<2 >per shock wave directly to a zone or treatment site of the injured or diseased nerves initiates or accelerates the regeneration and repair process wherein the zone or treatment site of the injured or diseased nerves is positioned directly in a path of the pulse or wave pattern in absence of any focal point or if a focal point exists, the zone or treatment site is positioned away from any focal point wherein the energy density is selected to avoid cell damage to the injured or otherwise diseased nerves within the treatment site or zone.

2. The method according to claim 1 wherein the nerve has been severed creating one or more ends of proximal stumps and distal

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stumps and a pul	se or wave pattern is admin	nistered to the ends of th	e proximal and distal stumps.		
3. The method ac	ecording to claim 2 wherein	n fibrin containing collag	genase is used as adhesive for the stumps.		
4. The method ad	ccording to claim 2 wherein	n the ends are sutured.			
5. The method ad	ccording to claim 4 wherein	n the sutured region is co	pated with a fibrin and collagenase mixture.		
6. The method ad	ecording to claim 2 wherein	n the stumps of individua	al severed fascicle groups are separately co-apted.		
7. The method ad	ccording to claim 2 wherein	n a nerve graft is interpo	sed between the stumps.		
8. The method ad	ccording to claim 7 wherein	n interfascicular nerve g	rafts are employed.		
9. The method ad	ccording to claim 1 wherein	n injury has resulted in n	euroma in continuity.		
10. The method a	according to claim 1 where	in the injured nerves are	subjected to surgical repair prior to administering the		
exposure to press	sure pulse or acoustic shoc	k waves.			
11. The method a	according to claim 1 where	in the method further co	mprises the step of:		
administering on	administering one or more nerve regenerating medicaments to the patient.				
12. A method of	treating a patient with a ne	urological disorder or in	jury to the brain by treating the neuronal cells of the brain		
tissue to stimulat steps of:	e by accelerating and incre	asing nerve or neurolog	ical brain tissue growth or regeneration or repair comprises the		
treating a patient	with a neurological disord	ler or injury to the brain	by treating the neuronal cells of the brain tissue;		
activating an aco	activating an acoustic shock wave or pressure pulse generator or source to emit a pressure pulses or acoustic shock waves, the				
pressure pulse being an acoustic pulse which includes several cycles of positive and negative pressure, wherein the pressure pulse					
has an amplitude of the positive part of such a cycle should be above 0.1 MPa and the time duration of the pressure pulse is from					
below a microsecond to about a second, rise times of the positive part of the first pressure cycle in the range of nano-seconds (ns)					
up to some milli-seconds (ms), the acoustic shock waves being very fast pressure pulses having amplitudes above 0.1 MPa and					
rise times of the	amplitude being below 100	)'s of ns, the duration of	the shock wave is typically below 1-3 micro-seconds ( $\mu$ s) for		
the positive part	of a cycle and typically ab	ove some micro-seconds	for the negative part of a cycle; and		
subjecting the neuronal cells to convergent, divergent, planar or near planar acoustic shock waves or pressure pulses in the					

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absence of a focal point impinging the neuronal cells stimulating a cellular response in the absence of creating cavitation bubbles evidenced by not experiencing the sensation of hemorrhaging caused by the emitted waves or pulses in the neuronal cells wherein the neuronal cells are positioned within an unobstructed path of the emitted shock waves or pressure pulses; and away from any localized geometric focal volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the neuronal cells or beyond the neuronal cells thereby passing the emitted waves or pulses through the neuronal cells while avoiding having any localized focal point within the neuronal cells of the brain wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm<2 >to a high end of below 1.0 mJ/mm<2>; and by

subjecting the neuronal cells of the neurological organ tissue or nerve tissue directly to the acoustic shock waves having a low energy density of less than 1.0 mJ/mm<2 >per shock wave stimulates said neuronal cells or brain tissue wherein the neuronal cells or brain tissue is positioned directly within a path of the emitted pressure pulses or acoustic shock waves in the absence of any focal point or if a focal point exists, the neuronal cells or brain tissue being treated is positioned away from any focal point wherein the energy density is selected to avoid any cell damage to the neuronal cells or brain tissue.

13. The method of treating neuronal cells to stimulate by accelerating or increasing neuronal cell growth or regeneration according to claim 12 wherein the administering is applied to a patient who has a pathological condition where neuronal repair can be facilitated including peripheral nerve damage caused by injury or disease such as diabetes, brain damage associated with stroke, and for the treatment of neurological disorders related to neurodegeneration, including Parkinson's disease, Alzheimer's disease and amyotrophic lateral sclerosis, multiple sclerosis and disseminated sclerosis.

14. The method of treating neuronal cells to stimulate by accelerating and increasing nerve or neurological brain tissue growth or regeneration or repair according to claim 12 wherein the emitted shock waves or pressure pulses are convergent having one or more geometric focal volumes or points at a distance of at least X from the generator or source, the method further comprising positioning the nerve or neurological brain tissue at a distance less than the distance X from the source.

15. The method of treating neuronal cells to stimulate by accelerating and increasing neuronal cell neurological brain tissue growth or regeneration or repair according to claim 12 wherein the neuronal cell or neurological brain tissue is from a mammal which is a human or an animal.

16. The method of treating neuronal cells to stimulate by accelerating and increasing cell or neurological brain tissue growth or regeneration or repair according to claim 12 wherein the step of subjecting the cells or neurological brain tissue to acoustic shock waves or pressure pulses includes killing bacteria by stimulating a biological defense mechanism within said cells or neurological

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brain tissue by ex	xposure to the acoustic	shock waves or pressure pu	lses.		
17 The method	of treating neuronal cel	ls to stimulate by accelerati	ag and increasing cell or neurological brain tissue growth or		
·					
regeneration or r	epair according to clair	n 12 further comprises a ste	p of administering one or more antibiotics or other drugs to a		
blood stream fee	ding the nerve or neuro	logical organ, the cell or ne	urological brain tissue being stimulated by the acoustic shock		
waves or pressur	e pulses.				
1					
0096	11/238,787	09/29/2005	Method of Stimulating Plant Growth		
	,				
Publication D	Publication Date: May 11, 2006 Publication No. US 2006/0100551 A1 Patent No. 7 600 343				
Grant Date: 10/13/2009					
Grant Date: 10/13/2009		Status: Maint Fee: all paid			
The method of stimulating a plant substance is disclosed. The method has the steps of activating a pressure pulse or an					

The method of stimulating a plant substance is disclosed. The method has the steps of activating a pressure pulse or an acoustic shock wave generator or source to emit pressure pulse or acoustic shock waves; and subjecting the plant substance to the pressure pulse or acoustic shock waves stimulating said plant substance wherein the substance is positioned within a path of the emitted shock waves. In one embodiment the emitted pressure pulse or shock waves are divergent or near planar. In another embodiment the emitted shock waves are convergent having a geometric focal volume of point at a distance of at least X from the source, the method further comprising positioning the substance at a distance less than the distance X from the source. The substance is a plant tissue having cells. The tissue can be a seed, zygotic embryo or somatic embryogenic culture of somatic embryos of plants. The plant may be a vegetable, tree, shrub or tuber. The tissue may be a part of the root system, a part of the stem system or a part of the leaf system. The method of stimulating includes activating the cells within the treated tissue thereby releasing growth factor proteins or other chemical compositions promoting growth and accelerating germination or plant growth.

1. The method of stimulating a plant substance, the plant substance being a tissue having cells with cellular membranes, comprises the steps of:

activating a pressure pulse or an acoustic shock wave generator or source to emit pressure pulses or acoustic shock waves wherein the pressure pulses or acoustic shock waves are acoustic pulses which include several cycles of positive and negative pressure, the amplitude of the positive part of such a cycle being above 0.1 MPa having rise times of the positive part of the first pressure cycle amplitude being below 100's of ns and the duration being below 1 to 3 micro-seconds ( $\mu$ s) for the positive part of a cycle and above some micro-seconds for the negative part of a cycle; and

subjecting the plant substance to the pressure pulses or acoustic shock waves stimulating said substance with convergent, divergent, planar or near planar acoustic shock waves or pressure pulses in the absence of a focal point impinging the plant substance stimulating a cellular response in the absence of creating cavitation bubbles evidenced by not experiencing the sensation of rupturing cellular membranes of the cells caused by the emitted waves or pulses in the cellular tissue of the plant

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substance where	in the substance is position	ed within a path of the e	mitted pressure pulses or shock waves away from any
localized geomet	ric focal volume or point of	of the emitted shock way	es wherein the emitted shock waves or pressure pulses either
have no geometr	ic focal volume or point or	have a focal volume or	point ahead of the plant substance or beyond the plant
substance thereby	y passing the emitted wave	es through the plant subs	tance while avoiding having any localized focal point within
the plant substan	ce wherein the emitted pre	ssure pulses or shock wa	aves are convergent, divergent, planar or near planar and the
pressure pulse sh	ock wave generator or sou	rce is based on electro-h	ydraulic, electromagnetic, piezoceramic or ballistic wave
generation havin	g an energy density value	ranging as low as 0.0000	1 mJ/mm<2 >to a high end of below 1.0 mJ/mm<2>, the
stimulation havir	ng a dosage duration betwe	en a few seconds to 20 1	ninutes or greater at an energy density in the range of 0.00001
mJ/mm<2 >to 1.	0 mJ/mm<2 >per shock wa	ave or less while avoidin	g or minimizing cell or membrane damage or rupturing by not
creating cavitation	on bubbles in the tissue of t	he plant substance.	
		-	
2. The method of	f stimulating a substance of	f claim 1 wherein the en	itted pulses or shock waves are divergent or near planar
having no geome	etric focal volume or point	impinging the plant sub	stance.
5 5	1		
3. The method of	f stimulating a substance of	f claim 1 wherein the em	itted pulses or shock wayes are convergent having a geometric
focal volume or i	point at a distance of at lea	st X from the generator	or source, the method further comprising positioning the
substance at a dis	stance less than the distance	e X from the source so a	s to avoid having a geometric focal volume or point impinging
the plant substan		e X from the source so t	s to avoid naving a geometric rocal volume of point impliging
the plant substan			
4. The method of	f stimulating a plant substa	nce of claim 1 wherein t	he tissue is one or more seeds of a plant.
5. The method of	f stimulating a plant substa	nce of claim 4 wherein t	he plant is a tree.
6. The method of	f stimulating a plant substa	nce of claim 4 wherein t	he plant is a bush.
7. The method of	f stimulating a plant substa	nce of claim 4 wherein t	he plant is a vegetable.
8. The method of	f stimulating a plant substa	nce of claim 4 wherein t	he plant is cotton.
9. The method of	f stimulating a plant substa	nce of claim 4 wherein t	he plant is soybean.
10. The method of	of stimulating a plant subst	ance of claim 4 wherein	the plant is a flower.
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11. The method of	of stimulating a plant subst	ance of claim 1 wherein	the plant is a tuber.
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12. The method of stimulating a plant substance of claim 1 wherein the tissue is one or more somatic embryos.				
13. The method of stimulating a plant substance of claim 1 wherein the plant is asexually propagated.				
14. The method of stimulating a plant substance of claim 13 wherein the plant is grafted.				
15. The method of stimulating a plant substance of claim 13 wherein the plant is vegetative propagated by the rooting of cuttings.				
16. The method of stimulating a plant substance of claim 13 wherein the plant tissue is micro-propagated from somatic embryos in vitro from minute pieces of tissue or individual cells.				
17. The method of stimulating a plant substance of claim 1 wherein the tissue is a part of the root system.				
18. The method of stimulating a plant substance of claim 1 wherein the tissue is a clone of the genetic system of a plant species.				
19. The method of stimulating a plant substance of claim 1 wherein the tissue is one or more zygotic embryos.				
0097	11/238,733	09/29/2005	Method of Shock Wave Treating Fish and Shellfish	
Publication D	Publication Date: Feb 16, 2006 Publication No. US 2006/0036196 A1 Patent No. 7,578,796			
Grant Date: 08/25/2009 Status: Maint Fee: all paid				
The method of stimulating an aquatic life form is disclosed. The method has the steps of activating a pressure pulse or an acoustic shock wave generator or source to emit pressure pulse or acoustic shock waves; and subjecting the aquatic life form to the pressure pulse or acoustic shock waves stimulating said aquatic life form wherein the aquatic life form is positioned within a path of the emitted shock waves. The aquatic life form is a tissue having cells. The tissue can be an egg, zygotic embryo or larvae or an immature or a mature specimen. The aquatic life form may be a fish, shellfish, any crustacean, mussel, slam, oyster.				

abalone, scallop, shrimp, lobster, crab, crawfish, eel, octopus or any other aquatic life form. The method of stimulating includes activating the cells within the treated tissue thereby releasing growth factor proteins or other chemical compositions promoting growth and accelerating maturization. The tissue may be infected or exposed to infections from microbial sources such as microorganisms or viruses and the exposure to shock waves stimulates an activation of defenses of the immune system.

1. The method of stimulating an aquatic life form comprises the steps of:

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activating a press	sure pulse or an acoustic sh	ock wave generator or s	ource to emit pressure pulses or acoustic shock waves wherein	
the pressure puls	the pressure pulses or acoustic shock waves are acoustic pulses which include several cycles of positive and negative pressure, the			
amplitude of the	positive part of such a cycl	e being above 0.1 MPa	having rise times of the positive part of the first pressure cycle	
amplitude being	below 100's of ns and the d	luration being below 1 to	o 3 micro-seconds ( $\mu$ s) for the positive part of a cycle and	
above some mice	above some micro-seconds for the negative part of a cycle; and			
subjecting cellular tissue of the aquatic life form to the pressure pulses or acoustic shock waves stimulating said aquatic life form				
with convergent, divergent, planar or near planar acoustic shock waves or pressure pulses in the absence of a focal point				
impinging the aquatic life form stimulating a cellular response in the absence of creating cavitation bubbles evidenced by not				
experiencing the	sensation of cellular hemor	rrhaging caused by the e	emitted waves or pulses in the cellular tissue of the aquatic life	
form wherein the cellular tissue of the aquatic life form is positioned within a path of the emitted pressure pulses or shock waves				
away from any localized geometric focal volume or point of the emitted shock waves wherein the emitted shock waves or				
pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the aquatic life form or				
beyond the aquatic life form thereby passing the emitted waves through the aquatic life form while avoiding having any localized				
focal point within the aquatic life form wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or				
near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or				
ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm<2 >to a high end of below 1.0 mJ/,				
the stimulation having a dosage duration between a few seconds to 20 minutes or greater at an energy density in the range of				
0.00001 mJ/mm<2 >to 1.0 mJ/mm<2 >per shock wave or less while avoiding or minimizing cell or membrane damage or				
rupturing by not creating cavitation bubbles in the tissue of the aquatic life form.				

2. The method of stimulating an aquatic life form of claim 1 wherein the emitted pulses or shock waves are divergent or near planar.

3. The method of stimulating an aquatic life form of claim 1 wherein the emitted pulses or shock waves are convergent having a geometric focal volume or point at a distance of at least X from the generator or source, the method further comprising positioning the aquatic life form at a distance less than the distance X from the source.

4. The method of stimulating an aquatic life form of claim 1 wherein the aquatic life form is tissue having cells.

5. The method of stimulating an aquatic life form of claim 4 wherein the tissue is one or more embryos, eggs or larvae or immature or not fully mature specimen of an aquatic life form.

6. The method of stimulating an aquatic life form of claim 5 wherein the life form is a fish.

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7. The method of	7. The method of stimulating an aquatic life form of claim 5 wherein the life form is a shellfish.				
8. The method of stimulating an aquatic life form of claim 5 wherein the life form is a mollusk.					
9. The method of	9. The method of stimulating an aquatic life form of claim 4 wherein the life form is a crustacean.				
10. The method of stimulating an aquatic life form of claim 5 wherein the life form is shrimp.					
11. The method	of stimulating an aquatic li	fe form of claim 5 where	in the life form is a scallop.		
12. The method	of stimulating an aquatic li	fe form of claim 5 where	in the life form is an oyster.		
13. The method	of stimulating an aquatic li	fe form of claim 4 where	in the life form is a clam.		
14. The method	of stimulating an aquatic li	fe form of claim 4 where	in the life form is a lobster.		
15. The method	of stimulating an aquatic li	fe form of claim 14 whe	rein the life form is a crab.		
16. The method	of stimulating an aquatic li	fe form of claim 14 whe	rein the life form is an abalone.		
17. The method or bacterial infect	of stimulating an aquatic li tion.	fe form of claim 4 where	in the aquatic life form tissue is infected or exposed to a viral		
18. The method	of stimulating an aquatic li	fe form of claim 4 where	in the tissue has a degenerative condition or wound.		
19. The method anti-bacterial me	of stimulating an aquatic li dications.	fe form of claim 4 where	in the tissue is being treated with one or more anti-viral or		
20. The method tolerines.	of stimulating an aquatic li	fe form of claim 4 where	in the tissue is being treated with one or more vaccines or		
21. The method	of germicidally cleaning a	wound on an aquatic life	form comprises the steps of:		
activating a pres	sure puise or an acoustic sr	lock wave generator or s	ource to enfit pressure pulses or acoustic snock waves wherein		

the pressure pulses or acoustic shock waves are acoustic pulses which include several cycles of positive and negative pressure, the

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amplitude of the	positive part of such	a cycle being above	e 0.1 MPa	having rise times of the positive part of the first pressure cycle	
amplitude being	amplitude being below 100's of ns and the duration being below 1 to 3 micro-seconds (µs) for the positive part of a cycle and				
above some mice	co-seconds for the neg	gative part of a cycl	le; and		
subjecting the wound of the aquatic life form to the pressure pulses or acoustic shock waves thereby cleaning said wound wherein					
the wound is positioned within a path of the emitted pressure pulses or shock waves away from any localized geometric focal					
volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either have no geometric focal					
volume or point	or have a focal volun	ne or point ahead of	f the wound	l or beyond the wound thereby passing the emitted waves	
through the wound while avoiding having any localized focal point within the wound wherein the emitted pressure pulses or					
shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on					
electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as					
$0.00001 \text{ mJ/mm} \le 2 \ge 10 \text{ a high end of below } 1.0 \text{ mJ/mm} \le 2 >$ , the stimulation having a dosage duration between a few seconds to 20 mJ/mm $\le 2 \ge 10^{-10} \text{ mJ/mm} \le 10^{-10} \text{ mJ/m} = 10^{-10}  mJ/m$					
minutes or greater at an energy density in the range of 0.00001 mJ/mm<2 >to 1.0 mJ/mm<2 >per shock wave or less while					
avoiding or minimizing cell or membrane damage or rupturing by not creating cavitation bubbles in the tissue of the aquatic life					
form.					
DN0099	11/256,016	21/10/2005	Germic	idal Method for Treating or Preventing Sinusitis	

Publication Date: April 27,<br/>2006Publication No. US 2006/0089673 A1<br/>Status: Maint Fee: all paidPatent No: 7,497,836<br/>Status: Maint Fee: all paid

The method of treatment for a nasal or sinus tissue exhibiting a sinusitis or rhinosinusitis disease or condition in a diagnosed patient is disclosed. The method has the steps of activating an acoustic shock wave generator or source to emit acoustic shock waves; and subjecting the nasal or sinus tissue, or the entire nasal or sinus region of the patient to the acoustic shock waves stimulating said tissue, wherein the tissue is positioned within a path of the emitted shock waves. The method of treatment may further have the steps of administering one or more medicaments prior, during or after subjecting the patient to acoustic shock waves or testing the bacterial count or viability of the treated tissue or region of the diagnosed patient after exposure to one or more acoustic shock wave treatments; or subjecting a tissue or organ to a surgical procedure to remove or repair some or all of any defects or degenerative tissues. The method of treatment is for prevention of infectious disease and may be used with debridement. The treatment is particularly useful in eradicating and inhibiting biofilm formations.

1. A method of treatment for a sinus or nasal tissue exhibiting a sinusitis or rhinosinusitis disease or condition in a diagnosed patient comprises the steps of:

receiving a diagnosed patient;

activating an acoustic shock wave or pressure pulse generator or source to emit low energy unfocused or focused acoustic shock
	·					
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waves or pressur	e pulses in a path having a	low energy density less	than 1.0 mJ/mm $<$ 2 > per shock wave or pressure pulse, the			
pressure pulse be	eing an acoustic pulse whic	h includes several cycle	s of positive and negative pressure, wherein the pressure pulse			
has an amplitude	e of the positive part of such	h a cycle should be abov	e 0.1 MPa and the time duration of the pressure pulse is from			
below a microsed	cond to about a second, rise	e times of the positive pa	art of the first pressure cycle in the range of nano-seconds (ns)			
up to some milli-	-seconds (ms), the acoustic	shock waves being very	v fast pressure pulses having amplitudes above 0.1 MPa and			
rise times of the	amplitude being below 100	)'s of ns, the duration of	the shock wave is typically below 1-3 micro-seconds ([mu]s)			
for the positive p	part of a cycle and typically	above some micro-seco	onds for the negative part of a cycle; and			
subjecting the sin	nus or nasal tissue, or the er	ntire sinus or nasal regio	on of the patient to converging, diverging, planar or near planar			
acoustic shock w	vaves or pressure pulses trea	atment energy density a	nd treatment dosage stimulating said tissue, in the absence of			
creating cavitation	on bubbles in the sinus or n	asal tissue, wherein the	tissue is positioned within a path of the emitted shock waves or			
pressure pulses,	in the absence of any acous	stic focal point or if a foo	cal point exists, the sinus or nasal tissue is positioned away			
from any localized	ed geometric focal volume	or point of the emitted s	hock waves wherein the emitted shock waves or pressure			
pulses either hav	e no geometric focal volum	ne or point or have a foc	al volume or point ahead of the tissue or beyond the tissue			
thereby passing t	the emitted waves or pulses	s through the tissue while	e avoiding having any localized focal point within the tissue			
wherein the emit	wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock					
wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an						
energy density value ranging as low as 0.00001 mJ/mm<2 > to a high end of below 1.0 mJ/mm<2>; wherein treatment energy						
density and treatment dosage are selected to avoid tissue damage within the sinus or nasal tissue as evidenced by the avoidance of						
cell hemorrhagin	ng, the shock waves or pres	sure pulses having a low	v treatment energy density in the range of 0.00001 mJ/mm $<$ 2 >			
to less than 1.0 n	nJ/mm<2>.					

2. The method of treatment of claim 1 further comprises the step of: administering one or more medicaments prior, during or after subjecting the patient to acoustic shock waves or pressure pulses.

3. The method of treatment of claim 1 further comprises the step of:

testing the bacterial count or viability of the treated tissue or region of the diagnosed patient after exposure to one or more acoustic shock wave or pressure pulse treatments.

4. The method of treatment of claim 1 further comprises the step of: subjecting a tissue to a surgical procedure to remove or repair some or all of any defects or degenerative tissues.

5. The method of treatment of claim 1 wherein the treated sinus or nasal tissue has an indication of one or more pathological conditions.

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6. The method of	claim 1 wherein the	treatment is for pre	vention of	infectious disease.	
7. The method of debridement.	claim 6 further com	prises the step of:			
8. The method of destroying biofili	claim 6 wherein the n in or on the treated	treatment further co tissue or region.	omprises t	ne step of:	
9. The method of destroying a tume	9. The method of claim 6 wherein the treatment further comprises the step of: destroying a tumor in or on the treated tissue or region.				
10. The method of growth factors in	of claim 6 wherein the the nasal or sinus str	e treated tissue or re ructure effecting a t	egion activ issue repai	rates or otherwise stimulates stem cells or release of cellular r or tissue regeneration.	
DN0105	11/458,413	07/19/2006	Method	of Attaching Soft Tissue To Bone	
Publication Da	ate: Jan 10, 2008	Publication N	o. <u>US 2(</u>	08/0009730 A1 Patent No. 7594930	
Grant Date: 09/29/2009 Status: Maint Fee: all paid					
A method of attaching or reattaching a ligament, tendon, cartilage or other soft tissue to a bone mass has the steps of: positioning or placing the ligament, tendon, cartilage or other soft tissue adjacent to the bone mass; anchoring or otherwise fastening the ligament, tendon, cartilage or soft tissue to the bone mass; and transmitting shock waves to the ligament, tendon or other soft tissue and the bone mass. Preferably the ligament, tendon, cartilage or other soft tissue is positioned in the path of the					
A method of attaching or reattaching a ligament, tendon, cartilage or other soft tissue to a bone mass has the steps of: positioning or placing the ligament, tendon, cartilage or other soft tissue adjacent to the bone mass; anchoring or otherwise fastening the ligament, tendon, cartilage or soft tissue to the bone mass; and transmitting shock waves to the ligament, tendon or other soft tissue and the bone mass. Preferably the ligament, tendon, cartilage or other soft tissue is positioned in the path of the emitted shock waves and away from geometric focal volume or point of the emitted shock waves. The shock waves may be					

transmitted during the surgical procedure or post operatively in one or more treatment dosages or both. In so treating the ligament, tendon, cartilage or other soft tissue should be positioned at a distance away from any geometric focal point to minimize hemorrhaging. The soft tissue may include cartilage or muscle tissue. In the case of cartilage, the tissue can be inserted into a bone mass prepared cavity and optionally anchored there by a covering bone plug.

1. The method of attaching or reattaching a ligament, tendon or other soft tissues to a bone mass comprises the steps of: positioning or placing the ligament, tendon, cartilage or other soft tissue in or adjacent to the bone mass; anchoring or otherwise fastening the ligament, tendon, cartilage or other soft tissue to the bone mass; transmitting pressure pulses including very fast pressure pulses called acoustic shock waves to the ligament, tendon, cartilage or other soft tissue and the bone mass from a pressure pulse shock wave generator or source wherein the pressure pulses or acoustic shock waves are acoustic pulses which includes several cycles of positive and negative pressure, wherein the pressure pulse has

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an amplitude of t	the positive part of such a c	cycle above 0.1 MPa and	the time duration of pressure pulse cycle is from 1			
microsecond (µs)	) to a second (s), rise times	to the peak pressure of	the positive part of the first pressure cycle is in the range of 1			
nano-second (ns)	) to 1 milli-second (ms), the	e acoustic shock waves b	being very fast pressure pulses having amplitudes of the			
positive part of the	he cycle similarly above 0.	1 MPa but with rise time	es to a peak pressure of the positive part of the amplitude being			
below 100 ns, the	e duration of the shock way	we is below 3 $\mu$ s for the p	positive part of a cycle and above $1 \ \mu s$ for the negative part of			
a cycle; and	a cycle; and					
subjecting the lig	subjecting the ligament, tendon, cartilage or other soft tissue and the bone mass to convergent, divergent, planar or near planar					
acoustic shock w	acoustic shock waves or pressure pulses in the absence of a focal point impinging the soft tissue and bone mass stimulating a					
cellular response in the absence of creating cavitation bubbles evidenced by not experiencing the sensation of cellular						
hemorrhaging caused by the emitted waves or pulses in the soft tissue wherein the cellular soft tissue is positioned within a path						
of the emitted sh	ock waves or pressure puls	es and away from any lo	ocalized geometric focal volume or point of the emitted shock			

waves wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the cellular soft tissue or beyond the cellular soft tissue thereby passing the emitted waves through the cellular soft tissue while avoiding having any localized focal point within the cellular soft tissue wherein the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging from  $0.00001 \text{ mJ/mrn} < 2 > to 1.0 \text{ m$ 

2. The method of claim 1 wherein the pressure pulses or acoustic shock waves are transmitted during the surgical procedure after anchoring or otherwise fastening the ligament, tendon, cartilage or other soft tissue.

3. The method of claim 1 wherein the pressure pulses or acoustic\_shock waves are transmitted post operatively in one or more treatment dosages.

4. The method of claim 1 wherein the transmitted pressure pulses or acoustic shock waves are divergent or near planar or wherein the emitted shock waves are convergent having a geometric focal volume or point at a distance of at least X from a generator or source, the method further comprising positioning the ligament, tendon, cartilage or other soft tissue at a distance less than the distance X from the source.

DN0112	11/676,761	02/20/2007	Pancreas Regeneration Treatment For Diabetics Using Extracorporeal Acoustic Shock Waves
Publication Da	te: 06/21/2007	Publication No	. <u>2007/0142753</u> Patent No. <u>7,988,648</u>

Docket	<b>USPTO</b> Seria	1 Filing Date	T.'.1
Number	Number	(day/month/year)	1 itle
Grant Date: 08/02/2011 Status: Maint Fee: all pa		Status: Maint Fee: all p	aid

The method of stimulating a tissue of a subsurface organ is disclosed. The method has the steps of activating an acoustic shock wave generator or source to emit acoustic shock waves; and subjecting the tissue to the acoustic shock waves stimulating said tissue wherein the tissue is positioned within a path of the emitted shock waves and away from a geometric focal volume or point of the emitted shock waves. In one embodiment the emitted shock waves are divergent or near planar. In another embodiment the emitted shock waves are convergent having a geometric focal volume of point at a distance of at least X from the source, the method further comprising positioning the tissue at a distance less than the distance X from the source. The subsurface organ is a tissue having cells. The tissue is a part of the incretin system. The subsurface organ is preferably the pancreas of a diabetic or at risk diabetic patient. The treatment stimulates the pancreatic tissue by an analgesic effect on the nerves and a stimulation of the insulin producing islets.

1. The method of stimulating a tissue of a subsurface organ comprises the steps of:

treating the tissue of the subsurface organ;

activating an acoustic shock wave generator or source to emit pressure pulses or acoustic shock waves directed toward the tissue of the subsurface organ to impinge the tissue of the subsurface organ with pressure pulses or shock waves having a low energy density in the range of 0.00001 mJ/mm<2 >to 1.0 mJ/mm<2>; the pressure pulse being an acoustic pulse which includes several cycles of positive and negative pressure, wherein the pressure pulse has an amplitude of the positive part of such a cycle should be above 0.1 MPa and the time duration of the pressure pulse is from below a microsecond to about a second, rise times of the positive part of the first pressure cycle in the range of nano-seconds (ns) up to some milli-seconds (ms), the acoustic shock waves being very fast pressure pulses having amplitudes above 0.1 MPa and rise times of the amplitude being below 100's of ns, the duration of the shock wave is typically below 1-3 micro-seconds ( $\mu$ s) for the positive part of a cycle and typically above some micro-seconds for the negative part of a cycle;

subjecting the tissue of the subsurface organ to convergent, divergent, planar or near planar acoustic shock waves or pressure pulses in the absence of a focal point impinging the substance stimulating a cellular response in the absence of creating cavitation bubbles evidenced by not experiencing the sensation of cellular hemorrhaging caused by the emitted waves or pulses in the tissue of the subsurface organ wherein the tissue of the subsurface organ is positioned within a path of the emitted shock waves or pressure pulses and away from any localized geometric focal volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the tissue of the subsurface organ or beyond the tissue of the subsurface organ thereby passing the emitted waves through the tissue of the subsurface organ while avoiding having any localized focal point within the tissue of the subsurface organ wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value

# **TRT USPTO Patent Filings** Docket **USPTO** Serial Filing Date Title Number Number (day/month/year) ranging as low as 0.00001 mJ/mm<2 >to a high end of below 1.0 mJ/mm<2>. 2. The method of stimulating a tissue of a subsurface organ of claim 1 wherein the emitted shock waves are divergent or near planar. 3. The method of stimulating a tissue of a subsurface organ of claim 1 wherein the emitted shock waves are convergent having a geometric focal volume or point at a distance of at least X from the generator or source, the method further comprising positioning the tissue at a distance less than the distance X from the source. 4. The method of stimulating a tissue of a subsurface organ of claim 1 wherein the tissue is a tissue having cells. 5. The method of stimulating a tissue of a subsurface organ of claim 4 wherein the tissue is an organ of a mammal. 6. The method of stimulating a tissue of a subsurface organ of claim 5 wherein the mammal is a human or an animal exhibiting type 1 or type 2 diabetes condition. 7. The method of stimulating a tissue of a subsurface organ of claim 6 wherein the organ is a pancreas. 8. The method of stimulating a tissue of a subsurface organ of claim 6 wherein the organ is a liver. 9. The method of stimulating a tissue of a subsurface organ of claim 6 wherein the organ is a kidney. 10. The method of stimulating a tissue of a subsurface organ of claim 4 wherein the tissue is a part of the incretin system. 11. The method of stimulating a tissue of a subsurface organ of claim 10 wherein the tissue is a part of the incretin system, including alpha cells, beta cells, neural cells, nerve cells and islets for the production of insulin. 12. The method of stimulating a tissue of a subsurface organ of claim 11 wherein the tissue is a part of the pancreas. 13. The method of stimulating a tissue of a subsurface organ of claim 12 wherein the step of subjecting the tissue to acoustic shock waves creates an analgesic effect on the nerve cells sufficient to deactivate the pancreatic sensory nerves and to thereby stimulate the islets to begin producing insulin normally. 14. The method of stimulating a tissue of a subsurface organ of claim 12 wherein the step of subjecting the tissue to acoustic

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shock waves red	shock waves reduces the chronic inflammation of islets of the pancreas.					
15. The method	of stimulating a tissue of a	subsurface organ of claim	m 12 wherein the step of subjecting tissue to acoustic shock			
waves stimulates	the nerve cells of the panel	creas to secrete neuropep	tides.			
16. The method	of stimulating a tissue of a	subsurface organ of claim	m 12 wherein the step of subjecting the substance to acoustic			
shock waves stin	nulates at least some of sai	d cells within said substa	ance to release or produce one or more of nitric oxygen (NO),			
vessel endothelia	l growth factor (VEGF), b	one morphogenetic prote	ein (BMP) or other growth factors.			
17. The method	of stimulating a substance	of claim 4 wherein the su	ubstance tissue has a pathological condition.			
18. The method	of stimulating a tissue of a	subsurface organ of claim	m 12 wherein the organ is in a degenerative condition.			
19. The method	of stimulating a tissue of a	subsurface organ of claim	m 12 further comprises the step of injecting neuropeptide			
substance P into	the pancreas to stimulate th	he nerve cells and allow	islets to produce insulin properly.			
20. The method	of preventive shock wave t	herapy comprises the ste	eps of:			
identifying a dial	petic at risk patient, the pat	tient having an at risk tis	sue;			
treating the at ris	k tissue;					
subjecting the at	risk tissue to shock waves	to stimulate tissue repair	r;			
activating an aco	ustic shock wave generato	r or source to emit press	ure pulses or acoustic shock waves directed toward the at risk			
tissue to impinge	the at risk tissue with pres	ssure pulses or shock wa	ves having a low energy density in the range of 0.00001			
mJ/mm<2 >to 1.	0 mJ/mm<2>; the pressure	pulse being an acoustic	pulse which includes several cycles of positive and negative			
pressure, wherein	n the pressure pulse has an	amplitude of the positiv	e part of such a cycle should be above 0.1 MPa and the time			
duration of the p	ressure pulse is from belov	v a microsecond to about	t a second, rise times of the positive part of the first pressure			
cycle in the rang	e of nano-seconds (ns) up t	to some milli-seconds (m	ns), the acoustic shock waves being very fast pressure pulses			
having amplitude	having amplitudes above 0.1 MPa and rise times of the amplitude being below 100's of ns, the duration of the shock wave is					
typically below 1-3 micro-seconds (µs) for the positive part of a cycle and typically above some micro-seconds for the negative						
part of a cycle; and						
subjecting the at risk tissue to convergent, divergent, planar or near planar acoustic shock waves or pressure pulses in the absence						
of a focal point in	of a focal point impinging the at risk tissue stimulating a cellular response in the absence of creating cavitation bubbles evidenced					
by not experiencing the sensation of cellular hemorrhaging caused by the emitted waves or pulses in the at risk tissue wherein the						
at risk tissue is p	ositioned within a path of t	the emitted shock waves	or pressure pulses and away from any localized geometric			
focal volume or	point of the emitted shock	waves wherein the emitt	ed shock waves or pressure pulses either have no geometric			

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focal volume or p	oint or have a focal	volume or point and	ead of the a	at risk tissue or beyond the at risk tissue thereby passing the	
emitted waves the	ough the at risk tiss	ue while avoiding h	laving any	localized focal point within the at risk tissue wherein the	
emitted pressure	oulses or shock wav	es are convergent, d	livergent, p	planar or near planar and the pressure pulse shock wave	
generator or source	ce is based on electr	o-hydraulic, electro	magnetic,	piezoceramic or ballistic wave generation having anenergy	
density value rang	ging as low as 0.000	01 mJ/mm<2 >to a	high end c	of below 1.0 mJ/mm<2>.	
21. The method of more indications	f preventive shock v of risk based on fam	vave therapy of clai ily history, genetic	im 20 when disposition	rein the step of identifying an at risk patient includes one or n, physical condition, or blood or tissue analysis.	
22. The method o measured baselin	f preventive shock v e condition pre shoc	vave therapy of clai k wave therapy.	im 20 furth	her comprises the step of testing the at risk tissue to establish	
23. The method of treated tissue for the tissue for	f preventive shock v comparison to the b	wave therapy of clai aseline condition.	im 22 furth	her comprises the step of post shockwave therapy testing the	
			Wound	Care Bandaging In Combination With Acoustic	
DN0116	11/739,715	04/25/2007	Shock V	Wave Applications	
	10/20/2000		D 11		
Publication Da	te: 10/30/2008		Publica	tion No. $2008/0269651 \text{ A1}$ Patent No. $8,057,411$	
Grant Date: 1	1/15/2011		Maint F	See: all paid	
A method and device for treating wounds 10 of tissue 11 is disclosed. The method has the steps of applying a porous pad					
12 upon the treatment surface of the ussue 11, covering the treatment surface and the porous pad 12 with a foll of sealing cover 14					
for isolating the treatment surface and the porous pad 12 from the atmosphere; filling the volume under the foil or sealing cover					
14 with fluid 100 and purging air from the volume under the foil or sealing cover 14 thereby fluid 100 saturating said porous pad					
12: applying an acoustic shock wave treatment through the foil or sealing cover 14 or surrounding tissue 11 or a combination					
thereof sending acoustic shock waves 200 through the volume to the treatment surface and underlying tissue 11 and thereafter					
pulling a vacuum to create a sub-atmospheric pressure under the foil or sealing cover 14 wherein the combination of the applied					
acoustic shock wa	aves 200 and sub-att	nospheric conditior	ns stimulate	es healing of the treatment surface and underlying tissue 11.	
Preferably the acc	oustic shock waves	200 are unfocused o	or a wide ar	rea focused shock wave pattern. More preferably the shock	
waves 200 are sur	waves 200 are sufficiently low energy or amplitude to avoid the sensation of pain during the treatment process thereby eliminating				

the need for anesthesia or localized numbing of the treatment area.

1. An acoustic shock wave and vacuum wound treatment device for application to tissue, the device comprising:

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a porous padding	for application upon a trea	atment surface of the tis	sue;		
an air tight water	vapor permeable foil or se	ealing cover for covering	g the treatment surface and the porous padding which seals the		
treatment surface	e from air;				
at least one fluid	supply line for supplying f	fluid to the treatment sur	face and the porous pad;		
at least one fluid	removal line for removing	; fluid from the treatmen	t surface and the porous padding, the removal line being to a		
vacuum line, wh	erein the introduction of flu	uids through the supply	line in combination with the removal of fluids and entrapped		
air through the re	emoval line thereby fluid sa	aturates the porous pad a	and treatment surface; and wherein		
an acoustic shocl	k wave applicator head dev	vice being acoustically c	oupled to either the foil or sealing cover, the foil or sealing		
cover and adjace	nt tissue or the adjacent tis	sue for transmission of a	acoustic shock waves to the treatment surface through the fluid		
saturated porous	padding, and wherein the t	transmission of acoustic	shock waves are emitted from the shock wave applicator as		
pressure pulses o	or acoustic shock waves in a	a transmission dosage di	irected toward the treatment surface of the tissue to impinge		
the tissue of a wo	ound with pressure pulses of	or shock waves having a	low energy density in the range of 0.00001 mJ/mm<2 >to 1.0		
mJ/mm<2>; the	pressure pulse being an acc	oustic pulse which inclu	des several cycles of positive and negative pressure, wherein		
the pressure puls	e has an amplitude of the p	positive part of such a cy	cle above 0.1 MPa and the time duration of the pressure pulse		
is from below a 1	nicrosecond to a second, ri	ise times of the positive	part of the first pressure cycle being in the range of nano-		
seconds (ns) up t	o some milli-seconds (ms)	, the acoustic shock way	ves being very fast pressure pulses having amplitudes above 0.1		
MPa and rise tim	ies of the amplitude being b	below 100's of ns, the du	aration of the shock wave is typically below 1-3 micro-seconds		
( $\mu$ s) for the posit	ive part of a cycle and typi	cally above some micro	-seconds for the negative part of a cycle; wherein the		
transmission dos	age subjects the tissue of th	he wound to convergent.	, divergent, planar or near planar acoustic shock waves or		
pressure pulses in	n the absence of a focal poi	int impinging the substa	nce stimulating a cellular response in the absence of creating		
cavitation bubble	es evidenced by not experie	encing the sensation of in	ncreased cellular hemorrhaging in the tissue of the wound		
caused by the em	nitted waves or pulses in the	e tissue of the wound wh	herein the tissue of the wound is positioned within a path of the		
emitted shock wa	emitted shock waves or pressure pulses and away from any localized geometric focal volume or point of the emitted shock waves				
wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or					
point ahead of the tissue of the wound or beyond the tissue of the wound thereby passing the emitted waves through the tissue of					
the wound while avoiding having any localized focal point within the tissue of the wound and wherein the emitted pressure pulses					
or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave is based on electro-hydraulic,					
electromagnetic,	piezoceramic or ballistic v	vave generation having a	an energy density value ranging as low as 0.00001 mJ/mm<2		
>to a high end of	f below 1.0 mJ/mm<2>.				

2. The acoustic shock wave and vacuum wound treatment device of claim 1 wherein the acoustic shock wave device transmits one of convergent, divergent, near planar or unfocused acoustic shock waves to the treatment surface and underlying tissue.

3. The acoustic shock wave and vacuum wound treatment device of claim 1 wherein said porous padding is comprised of an

elastic compressible porous material.  4. The acoustic shock wave and vacuum wound treatment device of claim 3 wherein the porous padding is comprised of an open pored polyvinyl alcohol-sponge foarn material.  5. The acoustic shock wave and vacuum wound treatment device of claim 1 further comprises: a controller; a supply side valve; a vacuum line connected to the return side valve; a vacuum line connected to the return side valve; a vacuum line connected to the return side valve; a supply side fluid pressure infusion line connected to the supply side valve; and wherein the controller can actuate the supply side valve, the return side valve, the vacuum line or the pressure infusion line to provide a fluid filled infusion of said porous pad or a drainage of said porous pad and treatment surface or a combination thereof for simultaneous fluid infusion and vacuum wound treatment device of claim 5 wherein after a fluid infusion wherein the return side valve is either closed or restricted there is created a fluid filled reservoir directly under the foil or sealing cover void of air; and wherein an acoustic shock wave treatment is applied through the foil or sealing cover, the tissue adjacent the sealing cover or a combination of the two passing through the fluid saturated porous padding to the treatment tissue and underlying tissue.  7. The acoustic shock wave and vacuum wound treatment device of claim 6 wherein the return side valve can be closed and vacuum applied through the vacuum line to create a sub atmospheric pressure to the treatment tissue adjacent the sealing cover or a combination of the two passing through the statuse of the tissue to accelerate a rate of healing of the tissue of the wound.  8. A method of treating wounds of tissue comprises the step of: applying a porous pad upon a treatment surface of the tissue, covering the treatment surface and porous pad with a sealing cover thereby fluid saturating said porous pad; applying an acoustic shock wave treatment through the sealing cover or a combinati	Docket Number	USPTO Serial Number	Filing Date (day/month/year)	Title			
<ul> <li>4. The acoustic shock wave and vacuum wound treatment device of claim 3 wherein the porous padding is comprised of an open pored polyvinyl alcohol-sponge foarn material.</li> <li>5. The acoustic shock wave and vacuum wound treatment device of claim 1 further comprises: <ul> <li>a controller;</li> <li>a supply side valve;</li> <li>a return side valve;</li> <li>a vacuum line connected to the return side valve;</li> <li>a supply side fluid pressure infusion line connected to the supply side valve; the vacuum line or the pressure infusion line to provide a fluid filled infusion of said porous pad or a drainage of said porous pad and treatment surface or a combination thereof for simultaneous fluid infusion and vacuum drainage.</li> </ul> </li> <li>6. The acoustic shock wave and vacuum wound treatment device of claim 5 wherein after a fluid infusion wherein the return side valve; is either closed or restricted there is created a fluid filled reservoir directly under the foil or sealing cover void of air; and wherein an acoustic shock wave treatment is applied through the foil or sealing cover, the tissue adjacent the sealing cover or a combination of the two passing through the fluid saturated porous padding to the treatment tissue and underlying tissue.</li> <li>7. The acoustic shock wave and vacuum wound treatment device of claim 6 wherein the return side valve can be closed and vacuum applied through the vacuum line to create a sub stanospheric pressure to the treatment tissue which in combination with the administered acoustic shock waves stimulates the tissue to accelerate a rate of healing of the tissue of the wound.</li> <li>8. A method of treating wounds of tissue comprises the step of:</li> <li>applying a porous pad upon a treatment surface of the tissue, covering the treatment surface and porous pad with a sealing cover thereby fluid saturating said porous pad,</li> <li>applying an acoustic shock wave treatment through the sealing cover or surrounding tissue and wherein the transmission dacoustic</li></ul>	elastic compress	ible porous material.					
<ul> <li>4. The acoustic shock wave and vacuum wound treatment device of claim 3 wherein the porous padding is comprised of an open pored polyvinyl alcohol-sponge foam material.</li> <li>5. The acoustic shock wave and vacuum wound treatment device of claim 1 further comprises: <ul> <li>a controller;</li> <li>a supply side valve;</li> <li>a return side valve;</li> <li>a vacuum line connected to the return side valve;</li> <li>a supply side fluid pressure influsion line connected to the supply side valve; and</li> <li>wherein the controller can actuate the supply side valve; the return side valve, the vacuum line or the pressure influsion line to provide a fluid filled influsion of said porous pad or a drainage of said porous pad and treatment surface or a combination thereof for simultaneous fluid influsion and vacuum drainage.</li> </ul> </li> <li>6. The acoustic shock wave and vacuum wound treatment device of claim 5 wherein after a fluid influsion wherein the return side valve is either closed or restricted there is created a fluid fliel reservoir directly under the foil or scaling cover or al combination thereof acoustic shock wave treatment is applied through the foil or scaling cover, the tissue adjacent the sealing cover or a combination of the two passing through the fluid saturated porous padding to the treatment tissue and underlying tissue.</li> <li>7. The acoustic shock wave and vacuum wound treatment device of claim 6 wherein the return side valve can be closed and vacuum applied through the vacuum line to create a sub atmospheric pressure to the treatment tissue which in combination with the administered acoustic shock waves stimulates the tissue to accelerate a rate of healing of the tissue of the wound.</li> </ul> <li>8. A method of treating wounds of tissue comprises the step of: <ul> <li>applying a porous pad upon a treatment surface of the tissue, covering the treatment surface and porous pad with a scaling cover for isolating the treatment surface and the porous pad from the atmosphere,</li></ul></li>							
pored polyvinyl alcohol-sponge foam material. 5. The acoustic shock wave and vacuum wound treatment device of claim 1 further comprises: a controller; a supply side valve; a return side valve; a vacuum line connected to the return side valve; a vacuum line connected to the return side valve; a supply side fluid pressure infusion line connected to the supply side valve; and wherein the controller can actuate the supply side valve; and wherein the controller can actuate the supply side valve, the vacuum line or the pressure infusion line to provide a fluid filled infusion of sid porous pad or a drainage of said porous pad and treatment surface or a combination thereof for simultaneous fluid infusion and vacuum drainage. 6. The acoustic shock wave and vacuum wound treatment device of claim 5 wherein after a fluid infusion wherein the return side valve is either closed or restricted there is created a fluid filled reservoir directly under the foil or scaling cover or aid combination of the two passing through the fluid saturated porous padding to the treatment tissue adjacent the sealing cover or a combination of the two passing through the fluid saturated porous padding to the treatment tissue adjacent and underlying tissue. 7. The acoustic shock wave and vacuum wound treatment device of claim 6 wherein the return side valve can be closed and vacuum applied through the vacuum line to create a sub atmospheric pressure to the treatment tissue which in combination with the administered acoustic shock wave stimulates the tissue to accelerate a rate of healing of the tissue of the wound. 8. A method of treating wounds of tissue comprises the step of: applying a porous pad upon a treatment surface of the tissue, covering the treatment surface and porous pad with a sealing cover for isolating the treatment surface of the tissue, covering the treatment surface and porous pad with a sealing cover for isolating the treatment surface of the tissue cover or surrounding tissue and wherein thereby fluid saturating said porous p	4. The acoustic s	hock wave and vacuum we	ound treatment device of	claim 3 wherein the porous padding is comprised of an open			
<ul> <li>5. The acoustic shock wave and vacuum wound treatment device of claim 1 further comprises: <ul> <li>a controller;</li> <li>a supply side valve;</li> <li>a return side valve;</li> <li>a vacuum line connected to the return side valve;</li> <li>a supply side fluid pressure infusion line connected to the supply side valve; and</li> <li>wherein the controller can actuate the supply side valve, the return side valve; the vacuum line or the pressure infusion line to provide a fluid filled infusion of said porous pad or a drainage of said porous pad and treatment surface or a combination thereof for simultaneous fluid infusion and vacuum drainage.</li> </ul> </li> <li>6. The acoustic shock wave and vacuum wound treatment device of claim 5 wherein after a fluid infusion wherein the return side valve is either closed or restricted there is created a fluid filled reservoir directly under the foil or sealing cover void of air, and wherein an acoustic shock wave treatment is applied through the fluid saturated porous pading to the treatment tissue and underlying tissue.</li> <li>7. The acoustic shock wave and vacuum wound treatment device of claim 6 wherein the return side valve can be closed and vacuum applied through the fluid saturated porous padding to the treatment tissue and underlying tissue.</li> <li>8. A method of treating wounds of tissue comprises the step of: <ul> <li>applying a porous pad upon a treatment surface of the tissue, covering the treatment surface and porous pad with a sealing cover for isolating the treatment surface and the porous pad from the atmosphere, a space between the sealing cover and treatment surface form a volume:</li> <li>filling the volume under the sealing cover with fluid and purging air from the volume under the sealing cover thereby fluid saturating said porous pad;</li> <li>applying an acoustic shock wave treatment through the sealing cover or surrounding tissue or a combination thereof sending acoustic shock waves treatment through the sealing cover or surrounding tissue</li></ul></li></ul>	pored polyvinyl	alcohol-sponge foam mater	rial.				
<ul> <li>5. The acoustic shock wave and vacuum wound treatment device of claim 1 further comprises: <ul> <li>a controller;</li> <li>a supply side valve;</li> <li>a return side valve;</li> <li>a supply side fluid pressure infusion line connected to the supply side valve; and</li> <li>wherein the controller can actuate the supply side valve, the return side valve, the vacuum line or the pressure infusion line to provide a fluid filled infusion of said porous pad or a drainage of said porous pad and treatment surface or a combination thereof for simultaneous fluid infusion and vacuum drainage.</li> </ul> </li> <li>6. The acoustic shock wave and vacuum wound treatment device of claim 5 wherein after a fluid infusion wherein the return side valve is either closed or restricted there is created a fluid filled reservoir directly under the foil or sealing cover void of air; and wherein an acoustic shock wave treatment is applied through the foil or sealing cover, the tissue adjacent the sealing cover or a combination of the two passing through the fluid saturated porous padding to the treatment tissue and underlying tissue.</li> <li>7. The acoustic shock wave and vacuum wound treatment device of claim 6 wherein the return side valve can be closed and vacuum applied through the vacuum line to create a sub atmospheric pressure to the treatment tissue which in combination with the administered acoustic shock waves stimulates the tissue to accelerate a rate of healing of the tissue of the wound.</li> <li>8. A method of treating wounds of tissue comprises the step of:</li> <li>applying a porous pad upon a treatment surface of the tissue, covering the treatment surface and porous pad with a sealing cover for isolating the treatment surface and the porous pad from the atmosphere, a space between the sealing cover thereby fluid saturating said porous pad;</li> <li>applying an acoustic shock wave treatment through the sealing cover or surrounding tissue or a combination thereof sending acoustic shock waves through the volume to</li></ul>							
a controller; a supply side valve; a return side valve; a vacuum line connected to the return side valve; a supply side fluid pressure infusion line connected to the supply side valve; and wherein the controller can actuate the supply side valve, the return side valve, the vacuum line or the pressure infusion line to provide a fluid filled infusion of said porous pad or a drainage of said porous pad and treatment surface or a combination thereof for simultaneous fluid infusion and vacuum drainage. 6. The acoustic shock wave and vacuum wound treatment device of claim 5 wherein after a fluid infusion wherein the return side valve is either closed or restricted there is created a fluid filled reservoir directly under the foil or sealing cover void of air; and wherein an acoustic shock wave treatment is applied through the foil or sealing cover, the tissue adjacent the sealing cover or a combination of the two passing through the fluid saturated porous padding to the treatment tissue and underlying tissue. 7. The acoustic shock wave and vacuum wound treatment device of claim 6 wherein the return side valve can be closed and vacuum applied through the vacuum line to create a sub atmospheric pressure to the treatment tissue of the wound. 8. A method of treating wounds of tissue comprises the step of: applying a porous pad upon a treatment surface of the tissue, covering the treatment surface and porous pad with a sealing cover for isolating the treatment surface and the porous pad from the atmosphere, a space between the sealing cover and treatment surface form a volume; filling the volume under the sealing cover with fluid and purging air from the volume under the sealing cover thereby fluid saturating sid porous pad; applying an acoustic shock wave treatment through the sealing cover or surrounding tissue or a combination thereof sending acoustic shock waves through the volume to the treatment surface and underlying tissue and wherein the transmission dacoustic shock waves are emitted from the	5. The acoustic s	hock wave and vacuum wo	ound treatment device of	claim 1 further comprises:			
a supply side valve; a return side valve; a vacuum line connected to the return side valve; a supply side fluid pressure infusion line connected to the supply side valve; and wherein the controller can actuate the supply side valve, the return side valve, the vacuum line or the pressure infusion line to provide a fluid filled infusion of said porous pad or a drainage of said porous pad and treatment surface or a combination thereof for simultaneous fluid infusion and vacuum drainage. 6. The acoustic shock wave and vacuum wound treatment device of claim 5 wherein after a fluid infusion wherein the return side valve is either closed or restricted there is created a fluid filled reservoir directly under the foil or sealing cover void of air; and wherein an acoustic shock wave treatment is applied through the foil or sealing cover, the tissue adjacent the sealing cover or a combination of the two passing through the fluid saturated porous padding to the treatment tissue and underlying tissue. 7. The acoustic shock wave and vacuum wound treatment device of claim 6 wherein the return side valve can be closed and vacuum applied through the vacuum line to create a sub atmospheric pressure to the treatment tissue which in combination with the administered acoustic shock wave stimulates the tissue to accelerate a rate of healing of the tissue of the wound. 8. A method of treating wounds of tissue comprises the step of: applying a porous pad upon a treatment surface of the tissue, covering the treatment surface and porous pad with a sealing cover for isolating the treatment surface out the porous pad from the atmosphere, a space between the sealing cover and treatment surface form a volume; filling the volume under the sealing cover with fluid and purging air from the volume under the sealing cover thereby fluid saturating said porous pad; applying an acoustic shock wave treatment through the sealing cover or surrounding tissue or a combination thereof sending acoustic shock waves through the volume t	a controller;						
a return side valve; a vacuum line connected to the return side valve; a supply side fluid pressure infusion line connected to the supply side valve; and wherein the controller can actuate the supply side valve, the return side valve, the vacuum line or the pressure infusion line to provide a fluid filled infusion of said porous pad or a drainage of said porous pad and treatment surface or a combination thereof for simultaneous fluid infusion and vacuum wound treatment device of claim 5 wherein after a fluid infusion wherein the return side valve is either closed or restricted there is created a fluid filled reservoir directly under the foil or sealing cover void of air; and wherein an acoustic shock wave treatment is applied through the foil or sealing cover, the tissue adjacent the sealing cover or a combination of the two passing through the fluid saturated porous padding to the treatment tissue and underlying tissue. 7. The acoustic shock wave and vacuum wound treatment device of claim 6 wherein the return side valve can be closed and vacuum applied through the vacuum line to create a sub atmospheric pressure to the treatment tissue which in combination with the administered acoustic shock waves stimulates the tissue to accelerate a rate of healing of the tissue of the wound. 8. A method of treating wounds of tissue comprises the step of: applying a porous pad upon a treatment surface of the tissue, covering the treatment surface and porous pad with a sealing cover for isolating the treatment surface of the tissue, covering the treatment surface and porous pad with a sealing cover for isolating the treatment surface of the tissue, covering the treatment surface of the result of or a combination thereof sending acoustic shock waves through the volume to the treatment surface and underlying tissue and acoust thereby fluid saturating said porous pad; applying an acoustic shock wave treatment through the sealing cover or surrounding tissue or a combination thereof sending acoustic shock waves	a supply side val	ve;					
<ul> <li>a vacuum line connected to the return side valve;</li> <li>a supply side fluid pressure infusion line connected to the supply side valve; and</li> <li>wherein the controller can actuate the supply side valve, the return side valve, the vacuum line or the pressure infusion line to</li> <li>provide a fluid filled infusion of said porous pad or a drainage of said porous pad and treatment surface or a combination thereof</li> <li>for simultaneous fluid infusion and vacuum drainage.</li> <li>6. The acoustic shock wave and vacuum wound treatment device of claim 5 wherein after a fluid infusion wherein the return side</li> <li>valve is either closed or restricted there is created a fluid filled reservoir directly under the foil or sealing cover void of air; and</li> <li>wherein an acoustic shock wave treatment is applied through the foil or sealing cover, the tissue adjacent the sealing cover or a</li> <li>combination of the two passing through the fluid saturated porous padding to the treatment tissue and underlying tissue.</li> <li>7. The acoustic shock wave and vacuum wound treatment device of claim 6 wherein the return side valve can be closed and</li> <li>vacuum applied through the vacuum line to create a sub atmospheric pressure to the treatment tissue which in combination with</li> <li>the administered acoustic shock waves stimulates the tissue to accelerate a rate of healing of the tissue of the wound.</li> <li>8. A method of treating wounds of tissue comprises the step of:</li> <li>applying a porous pad upon a treatment surface of the tissue, covering the treatment surface and porous pad with a sealing cover for isolating the treatment surface and the porous pad from the atmosphere, a space between the sealing cover and treatment surface form a volume;</li> <li>filling the volume under the sealing cover with fluid and purging air from the volume under the sealing cover thereby fluid saturating said porous pad;</li> <li>applying an acoustic shock wave treatment through the sealing cover or surrounding</li></ul>	a return side valv	/e;					
<ul> <li>a supply side fluid pressure infusion line connected to the supply side valve; and</li> <li>wherein the controller can actuate the supply side valve, the return side valve, the vacuum line or the pressure infusion line to provide a fluid filled infusion of said porous pad or a drainage of said porous pad and treatment surface or a combination thereof for simultaneous fluid infusion and vacuum drainage.</li> <li>6. The acoustic shock wave and vacuum wound treatment device of claim 5 wherein after a fluid infusion wherein the return side valve is either closed or restricted there is created a fluid filled reservoir directly under the foil or sealing cover void of air; and wherein an acoustic shock wave treatment is applied through the foil or sealing cover, the tissue adjacent the sealing cover or a combination of the two passing through the fluid saturated porous padding to the treatment tissue and underlying tissue.</li> <li>7. The acoustic shock wave and vacuum wound treatment device of claim 6 wherein the return side valve can be closed and vacuum applied through the vacuum line to create a sub atmospheric pressure to the treatment tissue of the wound.</li> <li>8. A method of treating wounds of tissue comprises the step of:</li> <li>applying a porous pad upon a treatment surface of the tissue, covering the treatment surface and porous pad with a sealing cover for isolating the treatment surface and the porous pad from the atmosphere, a space between the sealing cover thereby fluid saturating said porous pad;</li> <li>applying an acoustic shock wave treatment through the sealing cover or surrounding tissue or a combination thereof sending acoustic shock waves through the volume to the treatment surface and underlying tissue and wherein the transmission of acoustic shock waves through the volume to the treatment surface and underlying tissue and wherein the transmission of acoustic shock waves through the volume to the treatment surface and underlying tissue or a combination thereof sending acoustic sh</li></ul>	a vacuum line co	onnected to the return side	valve;				
<ul> <li>wherein the controller can actuate the supply side valve, the return side valve, the vacuum line or the pressure infusion line to provide a fluid filled infusion of said porous pad or a drainage of said porous pad and treatment surface or a combination thereof for simultaneous fluid infusion and vacuum wound treatment device of claim 5 wherein after a fluid infusion wherein the return side valve is either closed or restricted there is created a fluid filled reservoir directly under the foil or sealing cover void of air; and wherein an acoustic shock wave treatment is applied through the foil or sealing cover, the tissue adjacent the sealing cover or a combination of the two passing through the fluid saturated porous padding to the treatment tissue and underlying tissue.</li> <li>7. The acoustic shock wave and vacuum wound treatment device of claim 6 wherein the return side valve can be closed and vacuum applied through the vacuum line to create a sub atmospheric pressure to the treatment tissue which in combination with the administered acoustic shock waves stimulates the tissue to accelerate a rate of healing of the tissue of the wound.</li> <li>8. A method of treating wounds of tissue comprises the step of: applying a porous pad upon a treatment surface of the tissue, covering the treatment surface and porous pad with a sealing cover for isolating the treatment surface and the porous pad from the atmosphere, a space between the sealing cover and treatment surface form a volume; filling the volume under the sealing cover with fluid and purging air from the volume under the sealing cover thereby fluid saturating said porous pad; applying an acoustic shock wave treatment through the sealing cover or surrounding tissue or a combination thereof sending acoustic shock waves through the volume to the treatment surface and underlying tissue and wherein the transmission of acoustic shock waves are emitted from the shock wave applicator as pressure pulses or acoustic shock waves in a transmission dosage direct</li></ul>	a supply side flu	id pressure infusion line co	onnected to the supply sid	de valve; and			
provide a fluid filled infusion of said porous pad or a drainage of said porous pad and treatment surface or a combination thereof for simultaneous fluid infusion and vacuum drainage. 6. The acoustic shock wave and vacuum wound treatment device of claim 5 wherein after a fluid infusion wherein the return side valve is either closed or restricted there is created a fluid filled reservoir directly under the foil or sealing cover void of air; and wherein an acoustic shock wave treatment is applied through the foil or sealing cover, the tissue adjacent the sealing cover or a combination of the two passing through the fluid saturated porous padding to the treatment tissue and underlying tissue. 7. The acoustic shock wave and vacuum wound treatment device of claim 6 wherein the return side valve can be closed and vacuum applied through the vacuum line to create a sub atmospheric pressure to the treatment tissue which in combination with the administered acoustic shock waves stimulates the tissue to accelerate a rate of healing of the tissue of the wound. 8. A method of treating wounds of tissue comprises the step of: applying a porous pad upon a treatment surface of the tissue, covering the treatment surface and porous pad with a sealing cover for isolating the treatment surface and the porous pad from the atmosphere, a space between the sealing cover and treatment surface form a volume; filling the volume under the sealing cover with fluid and purging air from the volume under the sealing cover thereby fluid saturating said porous pad; applying an acoustic shock wave treatment through the sealing cover or surrounding tissue or a combination thereof sending acoustic shock waves through the volume to the treatment surface and underlying tissue and wherein the transmission of acoustic shock waves are emitted from the shock wave applicator as pressure pulses or acoustic shock waves in a transmission dosage directed toward the treatment surface of the tissue to impinge the tissue of a wound with pressure pulses or shock	wherein the cont	roller can actuate the suppl	ly side valve, the return s	side valve, the vacuum line or the pressure infusion line to			
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<ul> <li>8. The acoustic shock wave and vacuum wound treatment device of claim 5 wherein after a full influsion wherein the return side valve is either closed or restricted there is created a fluid filled reservoir directly under the foil or sealing cover void of air; and wherein an acoustic shock wave treatment is applied through the foil or sealing cover, the tissue adjacent the sealing cover or a combination of the two passing through the fluid saturated porous padding to the treatment tissue and underlying tissue.</li> <li>7. The acoustic shock wave and vacuum wound treatment device of claim 6 wherein the return side valve can be closed and vacuum applied through the vacuum line to create a sub atmospheric pressure to the treatment tissue which in combination with the administered acoustic shock waves stimulates the tissue to accelerate a rate of healing of the tissue of the wound.</li> <li>8. A method of treating wounds of tissue comprises the step of: applying a porous pad upon a treatment surface of the tissue, covering the treatment surface and porous pad with a sealing cover for isolating the treatment surface and the porous pad from the atmosphere, a space between the sealing cover and treatment surface form a volume; filling the volume under the sealing cover with fluid and purging air from the volume under the sealing cover thereby fluid saturating said porous pad; applying an acoustic shock wave treatment through the sealing cover or surrounding tissue and wherein the transmission of acoustic shock waves strough the volume to the treatment surface and underlying tissue and wherein the transmission of acoustic shock waves are emitted from the shock wave applicator as pressure pulses or acoustic shock waves in a transmission dosage directed toward the treatment surface of the tissue to impinge the tissue of a wound with pressure pulses or shock waves having a</li> </ul>	( The eventie of	1 1	····· 1 /···· - /··· - / 1-····	alaine 5 and annin a fear a flacid inflation and annin the metanon aids			
<ul> <li>varve is either closed of restricted there is created a find fined reservoir directly under the foil of sealing cover void of air; and wherein an acoustic shock wave treatment is applied through the foil or sealing cover, the tissue adjacent the sealing cover or a combination of the two passing through the fluid saturated porous padding to the treatment tissue and underlying tissue.</li> <li>7. The acoustic shock wave and vacuum wound treatment device of claim 6 wherein the return side valve can be closed and vacuum applied through the vacuum line to create a sub atmospheric pressure to the treatment tissue which in combination with the administered acoustic shock waves stimulates the tissue to accelerate a rate of healing of the tissue of the wound.</li> <li>8. A method of treating wounds of tissue comprises the step of: applying a porous pad upon a treatment surface of the tissue, covering the treatment surface and porous pad with a sealing cover for isolating the treatment surface and the porous pad from the atmosphere, a space between the sealing cover and treatment surface form a volume; filling the volume under the sealing cover with fluid and purging air from the volume under the sealing cover thereby fluid saturating said porous pad; applying an acoustic shock wave treatment through the sealing cover or surrounding tissue and wherein the transmission of acoustic shock waves through the volume to the treatment surface and underlying tissue and wherein the transmission dosage directed toward the treatment surface of the tissue of a wound with pressure pulses or shock waves having a</li> </ul>	6. The acoustic s	nock wave and vacuum we	bund treatment device of	claim 5 wherein after a fluid infusion wherein the feturn side			
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<ul> <li>7. The acoustic shock wave and vacuum wound treatment device of claim 6 wherein the return side valve can be closed and vacuum applied through the vacuum line to create a sub atmospheric pressure to the treatment tissue which in combination with the administered acoustic shock waves stimulates the tissue to accelerate a rate of healing of the tissue of the wound.</li> <li>8. A method of treating wounds of tissue comprises the step of: applying a porous pad upon a treatment surface of the tissue, covering the treatment surface and porous pad with a sealing cover for isolating the treatment surface and the porous pad from the atmosphere, a space between the sealing cover and treatment surface form a volume; filling the volume under the sealing cover with fluid and purging air from the volume under the sealing cover thereby fluid saturating said porous pad; applying an acoustic shock wave treatment through the sealing cover or surrounding tissue or a combination thereof sending acoustic shock waves through the volume to the treatment surface and underlying tissue and wherein the transmission of acoustic shock waves are emitted from the shock wave applicator as pressure pulses or acoustic shock waves in a transmission dosage directed toward the treatment surface of the tissue to impinge the tissue of a wound with pressure pulses or shock waves having a</li> </ul>	wherein an acous	be two pageing through the	s applied through the los	adding to the treatment tissue and underlying tissue			
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saturating said porous pad; applying an acoustic shock wave treatment through the sealing cover or surrounding tissue or a combination thereof sending acoustic shock waves through the volume to the treatment surface and underlying tissue and wherein the transmission of acoustic shock waves are emitted from the shock wave applicator as pressure pulses or acoustic shock waves in a transmission dosage directed toward the treatment surface of the tissue to impinge the tissue of a wound with pressure pulses or shock waves having a	filling the volume under the sealing cover with fluid and purging air from the volume under the sealing cover thereby fluid						
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shock waves are emitted from the shock wave applicator as pressure pulses or acoustic shock waves in a transmission dosage directed toward the treatment surface of the tissue to impinge the tissue of a wound with pressure pulses or shock waves having a	acoustic shock w	vaves through the volume to	o the treatment surface a	nd underlying tissue and wherein the transmission of acoustic			
directed toward the treatment surface of the tissue to impinge the tissue of a wound with pressure pulses or shock waves having a	shock waves are	emitted from the shock wa	we applicator as pressure	e pulses or acoustic shock waves in a transmission dosage			
	directed toward t	he treatment surface of the	e tissue to impinge the tis	sue of a wound with pressure pulses or shock waves having a			

Docket	<b>USPTO</b> Serial	Filing Date	Title			
Number	Number	(day/month/year)	The			
low energy densi	ity in the range of 0.00001	mJ/mm<2 >to 1.0 mJ/m	m<2>; the pressure pulse being an acoustic pulse which			
includes several	cycles of positive and nega	tive pressure, wherein th	ne pressure pulse has an amplitude of the positive part of such			
a cycle above 0.1	MPa and the time duration	n of the pressure pulse is	s from below a microsecond to a second, rise times of the			
positive part of the	he first pressure cycle being	g in the range of nano-se	econds (ns) up to some milli-seconds (ms), the acoustic shock			
waves being very	y fast pressure pulses havin	g amplitudes above 0.1	MPa and rise times of the amplitude being below 100's of ns,			
the duration of th	ne shock wave is typically b	pelow 1-3 micro-seconds	s ( $\mu$ s) for the positive part of a cycle and typically above some			
micro-seconds for	or the negative part of a cyc	ele; wherein the transmis	sion dosage subjects the tissue of the wound to convergent,			
divergent, planar	or near planar acoustic sho	ock waves or pressure pu	alses in the absence of a focal point impinging the substance			
stimulating a cell	lular response in the absend	ce of creating cavitation	bubbles evidenced by not experiencing the sensation of			
increased cellula	r hemorrhaging in the tissu	e of the wound caused b	y the emitted waves or pulses in the tissue of the wound			
wherein the tissu	e of the wound is positione	ed within a path of the er	nitted shock waves or pressure pulses and away from any			
localized geomet	tric focal volume or point o	f the emitted shock wav	es wherein the emitted shock waves or pressure pulses either			
have no geometr	have no geometric focal volume or point or have a focal volume or point ahead of the tissue of the wound or beyond the tissue of					
the wound thereb	by passing the emitted wave	es through the tissue of t	he wound while avoiding having any localized focal point			
within the tissue	within the tissue of the wound and wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near					
planar and the pressure pulse shock wave is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave						
generation having an energy density value ranging as low as 0.00001 mJ/mm<2 >to a high end of below 1.0 mJ/mm<2>;						
and pulling a vac	and pulling a vacuum to create a sub-atmospheric pressure under the sealing cover, wherein the combination of applied acoustic					
waves and the su	b-atmospheric conditions s	stimulate healing of the t	reatment surface and underlying tissue.			

9. The method of treatment of claim 8 wherein the acoustic shock waves are unfocused or wide area focused shock wave pattern.

10. The method of treatment of claim 9 wherein the shock waves are of a sufficiently low energy or amplitude to avoid the sensation of pain.

11. The method of treatment of claim 9 wherein the treatment of the acoustic shock waves creates a germicidal effect on the porous pad and the treatment surface of the tissue, and a fluid drainage within the volume under the cover removes tissue toxins and other decomposition products.

12. The method of treatment of claim 8 further comprises the step of introducing a medicament antiseptic or antibiotic into the volume under the sealing cover prior to activation of the shock waves to stimulate absorption or covering of the treatment surface tissue during and after the shock wave treatment.

Docket	USPTO Seria	l Filing	Date	Title
Number	Number	(day/mon	th/year)	The
	[	1	1	
DNI0120	11/02( 522	00/00/2007	Appara	tus and Method for Cellular Extract Enhancement
DN0120	11/830,532	08/09/2007		
Publication Date: 02/12/2009		Publica	tion No. 2009/0041864 A1 Patent No. 8,778,414	
Grant Date: 07/15/2014		Status:	Maint Fee: due 01/16/2026	
An apparatus 110 for increasing extracts 100E taken from cellular plant tissue 100 has a preparation container 114 for				

holding the cellular plant tissue 100, the container 114 having an inlet or opening 112 to receive a fluid 101 to wet the cellular plant tissue 100 and take extracts 100E from the cellular plant tissue 100 to create a fluid with extracts mixture 101E, and an outlet to pass the fluid with extracts mixture, a lower portion of the container is a holding vessel 111 to receive the fluid with extracts 101E; and an acoustic shock wave device 43 for transmitting shock waves 200 to the wet cellular plant tissue 100 to enhance release of extracts 100E into the fluid 101. The invention further discloses a method of increasing extracts 100E taken from cellular plant tissue 100 comprises the steps of placing prepared cellular plant tissue 100 in a container 114; introducing a fluid 101 into the container 114 to wet and immerse the prepared cellular plant tissue 100; and emitting acoustic shock waves 200 into the fluid 101 immersed cellular plant tissue 100 to increase the extracts 100E released by the plant tissue 100 into the fluid 101 and a product made from the method, the product being a beverage, medicine or drug.

1. An apparatus for increasing extracts taken from cellular plant tissue comprises:

a preparation container for holding the cellular plant tissue, the container having an inlet or opening to receive a fluid to wet the cellular plant tissue and take extracts from the cellular plant tissue to create a fluid with extracts mixture, and an outlet to pass the fluid with extracts mixture;

a holding vessel to receive the fluid with extracts; and

an acoustic shock wave device for generating and transmitting shock waves to the wet cellular plant tissue to enhance release of extracts into the fluid wherein the acoustic shock wave has a very rapid pressure spike the amplitude of the positive part is above 0.1 MPa and the cycle time duration is from below a microsecond to a second with the rise time of the positive part of the pressure cycle being in the range of nanoseconds up to milliseconds, achieved in an extremely short duration accordingly as the wave approaches a cell it compresses the cell initially, thereafter the pressure of the wave drops in a slower fashion as it continues across the cell that tends to put tension on the cell wall as it relaxes from the sudden compressive rise in pressure causing the cell wall to rebound in a spring like fashion and stretches slightly increasing permeability, rapid bombardment of the acoustic waves in a pattern sequence, which first compresses then stretches, and creates a rapid cellular squeezing effect enhancing permeability into and out of the cell walls wherein the cellular plant tissue is completely immersed in fluid with no air gaps or voids to impede the acoustic wave patterns, the acoustic shock wave device for generating and transmitting being an electro-hydraulic, electromagnetic, piezoceramic or ballistic device wherein the pressure pulse source is a point source generated by an electrical

# **TRT USPTO Patent Filings USPTO** Serial Docket Filing Date Title Number Number (day/month/year) discharge of an electrode, electromagnet or piezoceramic device under water or by an explosion to create acoustic shock waves exhibiting asymmetric ballistic pressure pulses for creating the rapid peak rise times. 2. The apparatus of claim 1 further comprises: a heating element to heat the fluid prior to contacting the cellular plant tissue. 3. The apparatus of claim 1 further comprises: a means to separate the fluid and extracts mixture from the cellular tissue wherein the cellular tissue is mechanically held as the fluid with extracts mixture passes to the holding vessel. 4. The apparatus of claim 1 wherein the acoustic shock wave device transmits the shock waves in a pattern covering a volumetric region of the held cellular tissue, the cellular tissue being immersed in the fluid. 5. The apparatus of claim 4 wherein the acoustic shock wave pattern is transmitted at least initially as the fluid passes through the cellular tissue. 6. The apparatus of claim 5 wherein the acoustic shock wave pattern is transmitted continuously as the fluid passes through the cellular tissue. 7. The apparatus of claim 5 wherein the transmission of the acoustic shock wave pattern is pulsed intermittently as the fluid passes through the cellular tissue. 8. The apparatus of claim 1 wherein the cellular plant tissue is ground coffee and the apparatus is coffee maker or coffee brewer. 9. The apparatus of claim 1 wherein the cellular plant tissue is coffee beans placed in a slurry to create a fluid with extract mixture to make an instant coffee product. 10. The apparatus of claim 1 wherein the cellular plant tissue is made of tea leaves and the apparatus is a tea maker. 11. The apparatus of claim 1 wherein the cellular plant tissue is one or more of the following; hops, barley, wheat, oats, soy beans or rice and the apparatus is used in brewing a beverage having an alcohol content. 12. The apparatus of claim 1 wherein the cellular plant tissue is used in the formulation of an extract for use in a drug or medicine composition.

		TRT USPTO P	atent Filings
Docket Number	USPTO Serial Number	Filing Date (day/month/year)	Title
Divisional DN01 Sta	: <b>20 DIV</b> - 14/295,951 atus: Patented 6/23/2	filed on 06-04-2014 2015 <b>US 9060525</b>	US 2014-0287069 A1 09/25/2014 Maint fee due 12/24/2026

1. A method of increasing extracts taken from cellular plant tissue comprises the steps of: placing prepared cellular plant tissue in a container;

introducing a fluid into the container to wet and immerse the prepared cellular plant tissue;

emitting acoustic shock waves into the fluid immersed cellular plant tissue to increase the extracts released by the plant tissue into the fluid, and wherein the step of emitting includes the step of: transmitting shock waves to the wet cellular plant tissue to enhance release of extracts into the fluid wherein the acoustic shock wave has a very rapid pressure spike the amplitude of the positive part is above 0.1 MPa and the cycle time duration is from below a microsecond to a second with the rise time of the positive part of the pressure cycle being in the range of nanoseconds up to milliseconds, achieved in an extremely short duration, accordingly as the wave approaches a cell it compresses the cell initially, thereafter the pressure of the wave drops in a slower fashion as it continues across the cell that tends to put tension on the cell wall as it relaxes from the sudden compressive rise in pressure causing the cell wall to rebound in a spring like fashion and stretches slightly increasing permeability, rapid bombardment of the acoustic waves in a pattern sequence, which first compresses then stretches, and creates a rapid cellular squeezing effect enhancing permeability into and out of the cell walls, wherein the cellular plant tissue is completely immersed in fluid with no air gaps or voids to impede the acoustic wave patterns.

2. The method of claim 1 further comprises the step of: heating the fluid prior to contacting the cellular plant tissue.

3. The method of claim 1 further comprises the step of:

separating the fluid and extracts mixture from the cellular tissue wherein the cellular tissue is mechanically held as the fluid with extracts mixture passes to the holding vessel.

4. The method of claim 1 further comprises the step of:

transmitting the shock waves in a pattern covering a volumetric region of the held cellular tissue as the cellular tissue is immersed in the fluid.

5. The method of claim 1 wherein the acoustic shock wave pattern is transmitted at least initially as the fluid passes through the cellular tissue.

6. The method of claim 1 wherein the acoustic shock wave pattern is transmitted continuously as the fluid passes through the cellular tissue.

7. The method of claim 1 wherein the transmission of the acoustic shock wave pattern is pulsed intermittently as the fluid passes through the cellular tissue.

#### **TRT USPTO Patent Filings** Docket **USPTO** Serial Filing Date Title Number Number (day/month/year) 8. The method of claim 1 wherein the cellular plant tissue is ground coffee. 9. The method of claim 1 wherein the cellular plant tissue is coffee beans placed in a slurry to create a fluid with extract mixture to make an instant coffee product. 10. The method of claim 1 wherein the cellular plant tissue is made of tea leaves. 11. The method of claim 1 wherein the cellular plant tissue is one or more of the following; hops, barley, wheat, oats, soy beans or rice. 12. The method of claim 1 wherein the cellular plant tissue is used in the formulation of an extract for use in a drug or medicine composition. Shock Wave Coupling Adapter and Method of Use DN0122 60/976,559 10/01/2007 PROV Status: Provisional DN0122 12/236,104 09/23/2008 Shock Wave Coupling Adapter and Method of Use Publication Date: 04/02/2009 Publication No. US2009/0088670 A1 Patent No. 8529451 Grant Date: 09/10/2013 Status: Maint Fee due 03/10/2025 3080.00

A shock wave adapter for use with a focused shock wave applicator has a flexible, rigid or semi-rigid membrane or housing adapted to be filled with a fluid. The membrane or housing is devoid of any air or gases and when filled forms a spacer volume for passing acoustic shock waves at low impedance. The wave pattern of the shock wave applicator enters the membrane or housing as a converging wave form to a focus inside the membrane or housing and exits through the membrane or housing in a diverging wave form into the patient to be treated.

1. A spacer for positioning between a patient and the lens of a focused shock wave applicator, the spacer comprises; a membrane being in the form of a bag-like structure or housing adapted to be filled with a fluid, the membrane or housing being devoid of any air or gasses, and when filled forms a spacer volume for passing acoustic shock waves at low impedance, wherein the space between the lens and the tissue is varied by the amount of fluid in the membrane and the wave pattern passing from the lens of the shock wave applicator enters through an oil or gel coated layer on the bag-like structure or housing and the lens as converging to a focus inside the membrane and exits through the opposite side of the membrane through an oil or gel coated layer

### **TRT USPTO Patent Filings USPTO** Serial Filing Date Title Number (day/month/year) on the bag like structure or housing coupled to the tissue in a diverging wave form into the tissue to be treated, the membrane being a spacer positioned separate from but adjacent to the shock wave applicator between a lens of the shock wave applicator and 2. The spacer of claim 1 wherein the membrane is a bag made of a synthetic material.

3. The spacer of claim 2 wherein the membrane is made of latex polyurethane, silicon, polyethylene or a flexible thermoplastic material.

4. The spacer of claim 2 wherein the membrane further comprises a fluid valve for adding fluid.

5. The spacer of claim 2 wherein the membrane is pre-filled with a degased water based solution.

6. The spacer of claim 2 wherein the membrane is packaged in a sterility barrier packaging and sterilized prior to use.

7. The spacer of claim 2 wherein the membrane is reusable.

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the patient.

8. The spacer of claim 2 wherein the membrane is disposable.

9. A spacer for positioning between a patient and the lens of a focused shock wave applicator, the spacer comprises; a membrane being in the form of a housing adapted to be filled with a fluid, the housing being devoid of any air or gasses, and when filled forms a spacer volume for passing acoustic shock waves at low impedance, wherein the space between the lens and the tissue is fixed by the size of the membrane and the wave pattern passing from the lens of the shock wave applicator enters through an oil or gel coated layer on the housing and the lens as converging to a focus inside the membrane and exits through the opposite side of the membrane through an oil or gel coated layer on the housing coupled to the tissue in a diverging wave form into the tissue to be treated, the membrane being a spacer positioned separate from but adjacent to the shock wave applicator between a lens of the shock wave applicator and the patient, wherein the housing is made of a thermoplastic material of low acoustic impedance.

10. The spacer of claim 9 wherein the housing is made of acrylic, polystyrene or polyethylene.

11. The spacer of claim 9 wherein the housing further comprises a fluid valve for adding fluid.

12. The spacer of claim 9 wherein the housing is pre-filled with a degased water based solution.

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Docket Number	USPTO Serial Number	Filing Date (day/month/y	e ear)	Title		
13. The spacer c	laim 9 wherein the hous	sing is packaged in a s	sterility	barrier packaging and sterilized prior to use.		
14. The spacer c	laim 9 wherein the hou	sing is reusable.				
15. The spacer c	laim 9 wherein the hous	sing is disposable.				
16. The spacer o a gas filled shiel	f claim 1 further compr d located around the pe	ises: rimeter of the fluid fil	led me	mbrane bag-like structure or housing.		
a gas filled shield located around the perimeter of the fluid filled membrane bag-like structure or housing. 17. A method of treating tissue with a focused shock wave generating source comprising: establishing a distance from a shock wave lens to a theoretical focal point; coating a fluid filled spacer with an oil or acoustic gel layer at locations between the lens and the spacer and similarly coating the fluid filled spacer a second location between the spacer and tissue to acoustically couple the two locations by placing the spacer between the lens and the tissue of the patient; adjusting the space between the lens and the tissue by the amount of fluid in the spacer; positioning the spacer between the tissue and the lens wherein the focal point when emitted is located inside the spacer; and activating the focused shock wave generating source having the focal point impinge inside the spacer and exit as a divergent wave pattern into the tissue to be treated.						
DN0126	11/959,868	12/19/2007	Pressı Wave Targe	re Pulse/Shock Wave Apparatus for Generating s Having Plane, Nearly Pane, Convergent Off t or Divergent Characteristics		
Publication D	ate: 06/19/2008	Publication No.	<u>US 2(</u>	008/0146971 A1 Patent No. <u>8257282</u>		
Grant Date: 0	Grant Date: 09/04/2012 Status: Maint Fee: due 03/04/2024 3080.00					
An appa	An apparatus for generating pressure pulse /shock waves (PP/SWs) is disclosed which comprises a pressure pulse/shock					
wave (PP/SW) source, a housing enclosing said PP/SW source, and an exit window from which wave fronts of waves generated						
by said PP/SW source emanate. The wave fronts have plane, nearly plane, convergent off target or divergent characteristics. In						

one embodiment, an extracorporeal shock wave system provides a planar wave for the treatment of tissue. A parabolic reflector is

provided in order to propagate the planar wave through a membrane and to the tissue of a human subject. A piezoelectric, electrohydraulic or electromagnetic source may be used to develop the wave.

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1. A the	erapeutic shock wave devic	e for treating living tissu	te to produce a living tissue reaction in a subject to which the
shock wave is ad	lministered comprising: a r	eflector housing; a parab	polic reflector disposed in the housing; and an energy source
disposed within	the parabolic reflector for c	leveloping a shock wave	so that a planar shock wave is formed by the parabolic
reflector and ema	anates from the housing an	d is transferred to the liv	ing tissue; in the absence of a focusing lens through an exit
window or mem	brane coupled to the tissue	so that the emitted wave	e is transmitted unfocused from the exit window or membrane
to the treated live	ing tissue with reflected un	focused flat acoustic wa	ves wherein the parabolic reflector is shaped and dimensioned
to provide the pl	anar shock wave having a j	power density level to pr	roduce a tissue reaction in a subject to which the wave is
administered and	d wherein the shock wave h	has a power density in the	e range of approximately 0.01 mJ/mm<2 >up to 1.0 mJ/mm<2
>to stimulate the	e treated living tissue while	avoiding tissue damage.	
2. The device of	claim 1, and further compr	rising a coupling membe	r which intersects the reflector along a circle having a diameter
in the range of a	pproximately 20 mm to 100	0 mm.	
3. The device of	claim 1 wherein the parabo	olic reflector has an origi	in point and a focal point spaced from the origin point a
distance in the ra	ange of approximately 3 mi	m to 10 mm.	
4. The device of	claim 1 wherein the energy	y source is an electrohyd	raulic source.
5. The device of	claim 1 wherein the energy	y source has a propagatic	on point centered approximately at a focal point of the
parabolic reflect	or.		
6. The device of	claim 1 wherein the energy	y source comprises a pai	r of electrode tips connected to a capacitor.
7. The device of	claim 6 wherein the energy	y source has a propagation	on point centered approximately between the electrode tips.
8. The device of	claim 1 wherein the parabo	olic reflector includes a c	cavity having an opening and the opening sealed by a
membrane.			
9. The device of	claim 8 wherein the cavity	<sup>r</sup> contains a fluid.	
10. The device o	of claim 9 wherein the fluid	is water.	

**DN0126 DIV 1** – 13/449,733 : Filed 04/18/2012 : Publication <u>US2012203146</u> Patent No. <u>8,535,249</u>

# TRT USPTO Patent Filings Docket Number USPTO Serial Number Filing Date (day/month/year) Title Status: Granted 09/17/2013 Maint fee due 03/17/2025 3080.00 1. Apparatus for generating pressure pulse/shock waves comprising: a pressure pulse/shock wave (PP/SW) source; a housing enclosing said PP/SW source; and an exit window from which shock wave fronts of waves generated by said PP/SW source emanate, wherein

said shock wave fronts have plane, nearly plane, convergent off target or divergent characteristics wherein the apparatus is shaped and dimensioned to provide the shock wave fronts having a power density level to produce a tissue reaction in a subject to which the wave is administered and wherein the waves have a power density in the range of approximately 0.01 mJ/mm<2 >up to 1.0 mJ/mm<2 >to stimulate a living tissue while avoiding tissue damage.

2. The apparatus of claim 1, wherein said PP/SW source comprises:

a pressure pulse/shock wave generating element for generating pressure pulses/shock waves; a focusing element for focusing said waves into a focus volume outside the focusing element; said apparatus further comprising a movable elongated mechanical element having a longitudinal axis; wherein said focus volume is situated on or at said longitudinal axis; and

wherein said movable elongated mechanical element is movable to extend to or beyond said focus volume so that shock wave fronts with divergent characteristics emanate from said exit window.

3. The apparatus of claim 2, wherein said movable elongated element is part of said housing and said exit window is a window of the housing.

4. The apparatus of claim 2, wherein said focusing element is an acoustic lens, a reflector or a combination thereof.

5. The apparatus of claim 1, wherein said PP/SW source comprises a pressure pulse/shock wave generating element for generating pressure pulses/shock waves, and wherein said waves emanate from said exit window without being focused by a focusing element.

6. Apparatus of claim 1, wherein said PP/SW source comprises an electro hydraulic pressure pulse/shock wave generating element.

7. The apparatus according to claim 6, wherein said electro hydraulic pressure pulse/shock wave generating element comprising at least two electrodes, said PP/SW source further comprising a generalized paraboloid according to the formula y<n>=2px, wherein—x and y are carthesian coordinates, —p/2 is a focal point measured from an apex of the generalized paraboloid, and—n is about 1.2<2 or 2<about 2.8, with n≠2, said electrodes being positioned within said generalized paraboloid, and wherein a spark between tips of said electrodes is, with about +/-5 mm of variance, generated at the focal point p/2 of the generalized paraboloid.

8. The apparatus of claim 7, wherein burn down of the electrode tips (z) is compensated by the selection of (p+/-z) and n so that the resulting generalized paraboloid has a configuration between a paraboloid defined

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by formula $y < 2 >= 2(p+z)x$ and a paraboloid defined by formula $y < 2 >= 2(p-z)x$ .						
9. The apparatus of claim 7, wherein at least one of said electrodes is adjustable.						
10. Apparatus of claim 1, wherein said PP/SW source comprises an electromagnetic pressure pulse/shock wave generating element.						
11. Apparatus of claim 10, wherein said electromagnetic pressure pulse/shock wave generating element is an electromagnetic flat or curved emitter emitting waves having nearly plane or divergent characteristics, and wherein said waves emanate from said exit window without being modified by a lens.						
12. Apparatus of claim 10, wherein said electromagnetic pressure pulse/shock wave generating element is an electromagnetic flat emitter emitting waves having nearly plane characteristics, and wherein said PP/SW source further comprises a lens for focusing said waves in a first focal point, wherein divergent waves are created behind said focal point emanate from said exit window.						
13. Apparatus of claim 10, wherein said electromagnetic pressure pulse/shock wave generating element is an electromagnetic flat emitter emitting waves having nearly plane characteristics and wherein said PP/SW source further comprises a lens for de-focusing said waves so that waves with divergent wave characteristics emanate from said exit window.						
14. Apparatus of claim 10, wherein said electromagnetic pressure pulse/shock wave generating element is an electromagnetic cylindrical emitter and wherein said PP/SW source further comprises at least one reflecting element and/or at least one lens.						
15. Apparatus of claim 1, wherein said PP/SW source comprises a piezoceramic pressure pulse/shock wave generating element.						
16. Apparatus of claim 15, wherein said piezoceramic pressure pulse/shock wave generating element is a piezoceramic flat or curved emitter emitting waves having nearly plane or divergent characteristics, and wherein said waves emanate from said exit window without being modified by a lens.						
17. Apparatus of claim 15, wherein said piezoceramic pressure pulse/shock wave generating element is a piezoceramic flat emitter emitting waves having nearly plane characteristics, and wherein said PP/SW source further comprises a lens for focusing said waves in a first focal point, wherein divergent waves generated behind said first focal point emanate at said exit window.						
18. Apparatus of claim 15, wherein said piezoceramic pressure pulse/shock wave generating element is a piezoceramic flat emitter emitting waves having nearly plane characteristics and wherein said PP/SW source further comprises a lens for de-focusing said waves so that waves with divergent wave characteristics emanate from said exit window.						
19. Apparatus of claim 15, wherein said piezoceramic pressure pulse/shock wave generating element is a						

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piezoceramic cyl	indrical emit	ter an	d wherein	said PP/SV	W source further comprises at least one reflecting		
element and/or a	t least one ler	ıs.					
20. A therapeutic device for administering a shock wave to produce a living tissue reaction in a subject comprising: a housing; a shock wave source disposed in the housing; wave directing and shaping structure in the housing responsive to the shock wave for causing a planar shock wave to be emitted from the housing and transferred to a living tissue; structure for coupling the shock wave to the subject; and wherein the device is shaped and dimensioned to provide the planar shock wave having a power density level to produce a tissue reaction in a subject to which the wave is administered and wherein the shock wave has a power density in the range of approximately 0.01 mJ/mm<2 >up to 1.0 mJ/mm<2 >to stimulate the living tissue while avoiding tissue damage.							
21. The therapeu parabolic reflecto	tic device of or.	claim	20 wherei	n the wave	e directing and shaping structure includes a		
22. The therapeu includes a memb	tic device of rane disposed	claim 1 acro	20 wherei oss the oper	n the housining.	ing includes an opening and the coupling structure		
23. The therapeu cavity having the	tic device of opening.	claim	22 wherei	n the wave	e directing and shaping structure is disposed in a		
24. The therapeu spark.	24. The therapeutic device of claim 20 wherein the shock wave source includes an electrode that develops a spark.						
DN0288	N0288 15131303 Apr. 18, 2016 TREATMENTS FOR BLOOD SUGAR LEVELS AND MUSCLE SHOCK WAVES				ENTS FOR BLOOD SUGAR LEVELS AND MUSCLE PTIMIZATION USING EXTRACORPOREAL ACOUSTIC VAVES		
Maint Fee open 07/19/2025 <u>US 2017-0296427 A1</u> 10/19/2017 US patent <u>11,389,370</u> 07/19/2022							
A method of treating red blood cells of a human patient has the steps of activating an acoustic shock wave generator or source to emit acoustic shock waves and subjecting a vascular system containing red blood cells and surrounding muscle tissue peripherally through an extremity of a patient to the acoustic shock waves by stimulating the extremity wherein the extremity is positioned within a path of the emitted shock waves and away from a geometric focal volume or point of the emitted shock waves. The methods also treat muscle tissue of aging patients, from muscle regeneration or athletes for legal performance enhancement without drugs.							
1. A method of lowering blood sugar level of a human patient exhibiting high blood sugar levels comprises the steps of:							

#### **TRT USPTO Patent Filings** Docket **USPTO** Serial Filing Date Title Number Number (day/month/year) measuring the human patient's blood sugar level prior to treating; activating an acoustic shock wave generator or source to emit acoustic shock waves; and subjecting a limb extremity of the human patient including a vascular system containing red blood cells and surrounding muscle tissue wherein the limb extremity is one of an arm, or a hand, or a leg, or a foot to the acoustic shock waves by stimulating through the limb extremity wherein the limb extremity of the human patient is positioned within a path of the emitted acoustic shock waves and away from a geometric focal volume or point of the emitted acoustic shock waves by emitting 500 or more shock waves at a low pulse energy of $0.1 \text{ mJ/mm} \le 2 \text{ or higher up to } 1.0 \text{ mJ/mm} \le 2 \text{ to lower the patient's high blood sugar levels}$ by emitting the acoustic shock waves through the limb extremity along a path through the skin and into muscle tissue, wherein the shock waves comprise amplitude above 0.1 MPa and rise times of the amplitude are below 100 nano-seconds with a duration of the acoustic shock waves being below 3 micro-seconds for a positive part of a cycle; and measuring the patient's blood sugar level after the treatment wherein the human patient has an elevated baseline blood sugar level prior to treating the limb extremity which is lowered from the elevated baseline blood sugar level after treatment. 2. The method of lowering blood sugar level of a human patient of claim 1, wherein the emitted acoustic shock waves are divergent or near planar. 3. The method of lowering blood sugar level of a human patient of claim 1, wherein the emitted acoustic shock waves are convergent having a geometric focal volume or point at a distance of at least X from the acoustic shock wave generator or source, the method further comprising positioning the extremity at a distance less than the distance X from the generator or source. 4. The method of lowering blood sugar level of a human patient of claim 1, wherein the patient is diabetic exhibiting type 1 or type 2 diabetes condition. 5. The method of lowering blood sugar level of a human patient of claim 1 wherein the limb extremity is a leg. 6. The method of lowering blood sugar level of a human patient of claim 5, wherein the limb extremity is a foot. 7. The method of lowering blood sugar level of a human patient of claim 1, wherein the limb extremity is an arm. 8. The method of lowering blood sugar level of a human patient of claim 1, wherein repeating the treatment periodically a plurality of times over a period of weeks on the limb extremity to lower said baseline level of blood sugar. **DN0288DIV**, divisional application filed 10/15/2021 US 17/502,778 Publication: US 2022/0031563 2/3/2022 Status: 10/27/2021 ready for examination TREATMENTS FOR BLOOD SUGAR LEVELS AND MUSCLE TISSUE OPTIMIZATION USING EXTRACORPOREAL ACOUSTIC SHOCK WAVES 1. The method of preventive shock wave therapy comprises the steps of: identifying a diabetic at risk patient, the patient having an at risk baseline blood sugar level; and subjecting the at risk extremity to shock waves to lower said baseline sugar level. 2. The method of preventive shock wave therapy of claim 1 wherein the step of identifying an at risk patient includes one or more indications of risk based on family history, genetic disposition, physical condition, or blood or extremity analysis.

3. The method of preventive shock wave therapy of claim 1 further comprises the step of testing the at risk extremity to establish measured the baseline condition pre shock wave therapy.

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4. The method of preventive shock wave therapy of claim 1 further comprises the step of post shockwave therapy testing the blood sugar level for comparison to the baseline condition.

5. The method of treating red blood cells of a human patient of claim 1 wherein repeating the method periodically a plurality of times over a period of weeks to lower said baseline level of blood sugar.

6. A method of treating skeletal muscle tissue of an aging human patient comprises the steps of:

activating an acoustic shock wave generator or source to emit acoustic shock waves; and

subjecting surrounding muscle tissue peripherally to the acoustic shock waves by stimulating the muscle tissue wherein the muscle tissue is positioned within a path of the emitted shock waves and away from a geometric focal volume or point of the emitted shock waves.

7. The method of treating an aging human patient of claim 6 wherein the emitted shock waves are divergent or near planar.

8. The method of treating an aging human patient of claim 6 wherein the emitted shock waves are convergent having a geometric focal volume or point at a distance of at least X from the generator or source, the method further comprising positioning the extremity at a distance less than the distance X from the source.

9. The method of treating an aging human patient of claim 6 wherein the patient is exhibiting one or more impairments such as: age related skeletal muscle atrophy and sarcopenia resulting in the loss of muscle capacity and mass, progressive motor neuron degeneration, increases in fat mass, decreases in lean muscle, bone mass, and cellular environmental aberrances are commonly seen alterations of aging muscle, impairments in metabolic rate, aerobic capacity, strength and balance, functional capacity, along with emotional and cognitive distress.

10. The method of treating an aging human patient of claim 6 wherein the emitted shock waves are of a low intensity ranging from  $0.10-0.12 \text{ mJ/mm} \le 2$ .

11. A method of treating skeletal muscle tissue of a human patient to optimize athletic performance and muscle resilience comprises the steps of:

activating an acoustic shock wave generator or source to emit acoustic shock waves; and

subjecting surrounding muscle tissue peripherally to the acoustic shock waves by stimulating the muscle tissue wherein the muscle tissue is positioned within a path of the emitted shock waves and away from a geometric focal volume or point of the emitted shock waves.

12. The method of treating a human patient to optimize athletic performance and muscle resilience of claim 11 wherein the emitted shock waves are divergent or near planar.

13. The method of treating a human patient to optimize athletic performance and muscle resilience of claim 11 wherein the emitted shock waves are convergent having a geometric focal volume or point at a distance of at least X from the generator or source, the method further comprising positioning the extremity at a distance less than the distance X from the source.

14. The method of treating a human patient to optimize athletic performance and muscle resilience of claim 11 wherein the patient is exhibiting one or more impairments such as: age related skeletal muscle atrophy and sarcopenia resulting in the loss of muscle capacity and mass, progressive motor neuron degeneration, increases in fat mass, decreases in lean muscle, bone mass, and cellular environmental aberrances are commonly seen alterations of aging muscle, impairments in metabolic rate, aerobic capacity, strength and balance, functional capacity, along with emotional and cognitive distress.

15. The method of treating a human patient to optimize athletic performance and muscle resilience of claim 11 wherein the emitted shock waves are of a low intensity ranging from  $0.10-0.14 \text{ mJ/mm} \le 2$ .

### **TRT USPTO Patent Filings** Docket **USPTO** Serial Filing Date Title Number Number (day/month/year) 16. The method of treating a human patient to optimize athletic performance and muscle resilience of claim 11 wherein the emitted shock waves cause a quick removal of lactic acid from the cells of the muscle tissue allowing quicker muscle recovery. 17. The method of treating a human patient to optimize athletic performance and muscle resilience of claim 11 wherein the treatment causes rapid recovery from muscle cramping. 18. The method of treating a human patient to optimize athletic performance and muscle resilience of claim 11 wherein the treatment is used for erectile dysfunction or penis performance enhancement. THERAPEUTIC TREATMENT FOR INCREASING **TESTOSTERONE** DN0300 15239323 Aug. 17, 2016 John Warlick Status: 06/13/2023 RCE filed Publication: US 2018-0049943 A1 02/22/2018 The method of treatment for increasing testosterone levels of an adult male patient is disclosed. The treatment has the steps of activating an acoustic shock wave generator or source to emit acoustic shock waves; and subjecting a testicle through the scrotum to the acoustic shock waves stimulating said testicle wherein the testicle is positioned within a path of the emitted shock waves. The emitted shock waves can be convergent, divergent, planar or near planar. 1. The method of treatment for increasing testosterone levels in an adult male patient comprises the steps of: activating an acoustic shock wave generator or source to emit acoustic shock waves; and subjecting a testicle through the scrotum to the acoustic shock waves stimulating said testicle wherein the testicle is positioned within a path of the emitted shock waves. 2. The method of treatment of claim 1 wherein the emitted shock waves are convergent, divergent, planar or near planar. 3. The method of treatment of claim 1 wherein the emitted shock waves are convergent having one or more geometric focal volumes of points at a distance of at least X from the generator or source, the method further comprising positioning the organ at a distance at or less than the distance X from the source. 4. The method of treatment of claim 1 further comprises the step of: testing the testosterone level of the patient prior to treatment. 5. The method of treatment of claim 1 further comprises the step of: testing the testosterone level of the patient after exposure to one or more acoustic shock wave treatments within 72 hours post treatment.

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DN0328	15984505	May 21, 2018	IMPROVED ACOUSTIC SHOCK WAVE THERAPEUTIC METHODS Inventor: John F. Warlick				
<u>US 2019-035080</u>	<u>)3 A1</u> 11/21/2019	US patent <u>11,389,371</u> 07/	/19/2022				
Maint Fee open ( CA filing 30264	07/19/2025 101 ref# P8190CA00	0					
A method of modulating glandular secretions by administering acoustic shock waves to a gland, includes the steps of activating acoustic shock waves of an acoustic shock wave generator to emit acoustic shock waves and subjecting the gland to acoustic shock waves stimulating the gland to have a modulated response. The modulated response is one of an adjustment in hormonal release which increases low level output, decreases high level output or stabilizes erratic output. The emitted acoustic shock wave generator is acoustically coupled to the patient's skin using a coupling gel or liquid. The gland is one of a testicle, ovary, pituitary gland, adrenal gland, thyroid gland, thymus, pineal gland, parathyroid, or hypothalamus. The method can be repeated one or more times.							
1. A method of modulating glandular secretions by administering acoustic shock waves to a gland of a patient, the gland is one of an ovary, a pituitary gland, an adrenal gland, a thyroid gland, a thymus, a pineal gland, a parathyroid, and a hypothalamus, the method comprises the steps of: activating an acoustic shock wave generator to emit acoustic shock waves; subjecting the gland to the acoustic shock waves to stimulate the gland to have a modulated response, wherein the modulated response is one of an adjustment in glandular secretions of hormonal release from the gland which increases low level hormonal output in the gland where the secretions are low relative to a normal level, or which decreases high level hormonal output in the gland where the secretions; and where the secretions; and wherein the emitted acoustic shock waves are low energy soft waves, the soft waves being focused or unfocused acoustic shock waves having an energy density of less than 0.4 mJ/mm<2>, wherein the shock waves comprise amplitude above 0.1 MPa and rise times of the amplitude are below 100 nano-seconds with a duration of the acoustic shock waves being below 3 micro-seconds							
2. The method of claim 1, wherein the shock wave generator is acoustically coupled to the patient's skin using a coupling gel or liquid.							
3. The method of claim 1, further comprising the step of stimulating the gland with a sufficient amount of acoustic shock waves to cause a release of nitric oxide.							
4. The method of claim 3, further comprising the step of stimulating the gland with a sufficient amount of acoustic shock waves to cause a release of growth factors including Vascular Endothelial Growth Factor (VEGF).							
5. The method of cause new blood	5. The method of claim 4, further comprising the step of stimulating the gland with a sufficient amount of acoustic shock waves to cause new blood vessels to be created increasing vascularization.						
6. The method of	f claim 1, is repeated one	e or more times.					
7. The method of claim 1, wherein the low energy soft waves have the energy density in the range of 0.01 mJ/mm $<2$ >to 0.4 mJ/mm $<2$ >.							

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8. The method of mJ/mm<2>.	8. The method of claim 7, wherein the low energy soft waves have the energy density in the range of 0.04 mJ/mm<2 >to 0.3 mJ/mm<2>.							
9. The method of	f claim 1, wherein the glan	d receives between 100 a	nd 2000 acoustic shock waves per therapy session.					
10. The method	of claim 1, wherein the gla	nd is an ovary.						
11. The method of was exhibiting lo	of claim 10, wherein the mow levels of estrogen relati	odulated response is an investor of estimated response of estimated and the second sec	ncrease in a hormonal release of estrogen wherein a patient trogen.					
12. The method was exhibiting h	of claim 10, wherein the m igh levels of estrogen relat	odulated response is a de- ive to a normal level of es	crease in a hormonal release of estrogen wherein a patient strogen.					
13. The method of by the adrenal gl	of claim 1, wherein the mo and.	dulated response reduces	panic attacks and anxiety by decreasing levels of adrenaline					
14. A method of modulating glandular secretions by administering acoustic shock waves to a testicle of a patient to decrease a level of testosterone within the patient, comprises the steps of: activating an acoustic shock wave generator to emit acoustic shock waves; subjecting the gland to acoustic shock waves to stimulate the testicle to have a modulated response wherein the modulated response is an adjustment in glandular secretions of testosterone from the testicle which decreases high level testosterone output in the testicle to stabilize erratic hormonal output in the testicle where the secretions are high relative to a normal level to achieve the normal level of testosterone secretions; and wherein the emitted acoustic shock waves are low energy soft waves, the soft waves being focused or unfocused acoustic shock waves having an energy density of less than 0.4 mJ/mm<2>, wherein the shock waves comprise amplitude above 0.1 MPa and rise times of the amplitude are below 100 nano-seconds with a duration of the acoustic shock waves being below 3 micro-seconds								
DN0329	16009807	June 15, 2018	IMPROVED ACOUSTIC SHOCK WAVE THERAPEUTIC METHODS John F. Warlick, John Patrick Finney, Janey Lynn Watts					
<u>US 2018-0296432 A1</u> 10/18/2018 US patent <u>11,389,372</u> 07/19/2022								
Maint Fee open 07/19/2025								
CA filing 3028059 ref # P8193CA00 A method of modulating glandular secretions by administering acoustic shock waves to a reflexology zone or region has been discovered. In one preferred embodiment, a treatment method achieves one or more of a) modulating blood sugar levels, b) stimulating insulin production levels or c) normalizing A1C levels by using the step of administering acoustic shock waves to a reflexology zone or region. The treatment method further has the steps of: activating acoustic shock waves of an acoustic shock wave generator to emit acoustic shock waves; subjecting the reflexology zone to acoustic shock waves stimulating the pancreas to have a modulated response wherein the modulated response is one of an adjustment in blood sugar levels or ingulin production								

1. A treatment method of treating a human patient exhibiting high or low blood sugar levels, high or low insulin production or abnormal A1C levels by achieving one or more of a) modulating blood sugar levels, b) stimulating insulin production levels or c)

and release or normalizing A1C levels which increases low level output, decreases high level output or stabilizes erratic output;

and wherein the emitted acoustic shock waves are focused or unfocused acoustic shock waves.

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InditionInditionInditionnormalizing A1C levels comprises the steps of:activating an acoustic shock wave generator with a shock wave applicator to emit acoustic shock waves;administering acoustic shock waves to a target site which is a reflexology zone of a patient, wherein the reflexology zoneunderlies the patient's skin in a region of a hand or foot and the reflexology zone lies in the path of the emitted shock waves by:subjecting the reflexology zone to acoustic shock waves stimulating a patient's tissue at a reflexology zone is in the path of theemitted shock waves from the shock wave applicator causing the specific gland-to have a modulated response wherein themodulated response is one or more of an adjustment in blood sugar levels or insulin production and a release or normalizing A1Clevels wherein the modulated response increases low level insulin output, decreases high level insulin output or stabilizes erraticinsulin output; andwherein the emitted acoustic shock waves are focused or unfocused acoustic shock waves, the emitted acoustic shock wavescomprise an energy density of 0.00001 mJ/mm<2 >to 1.0 mJ/mm<2 >and an amplitude above 0.1 MPa and rise times of theamplitude are below 100 nano-seconds with a duration of the acoustic shock waves being below 3 micro-seconds for a positivepart of a cycle.							
2. The treatment coupling gel or l	method of claim 1, where iquid.	in the shock wave genera	tor is acoustically coupled to the patient's skin using a				
3. The treatment inside arch of ear	method of claim 1, where ch foot.	in the reflexology zone f	or a pancreas is a region of the foot located in a middle of an				
4. The treatment index finger of the final sector of the final secto	method of claim 1, where he right hand and a region	in the reflexology zone for a left hand below a m	or a pancreas is a region of a right hand in a fatty part below an iddle finger of the left hand close to a wrist of the left hand.				
5. The treatment acoustic shock w insulin.	method of claim 1, further vaves to stimulate a pancre	r comprising the step of s as to cause a release of n	stimulating of the patient's tissue with a sufficient amount of itric oxide, secretion of digestive enzymes, hormones and				
6. The treatment shock waves cau	method of claim 5, further se a release of growth fact	r comprising the step of s ors including vascular er	stimulating of the pancreas with a sufficient amount of acoustic adothelial growth factor (VEGF).				
7. The treatment shock waves cau	7. The treatment method of claim 6, further comprising the step of stimulating of the pancreas with a sufficient amount of acoustic shock waves cause new blood vessels to be created to increase vascularization.						
8. The treatment	method of claim 1, is repe	eated one or more times.					
9. The treatment method of claim 8, wherein the number of repeated treatments occur on a schedule over a period of three or more weeks, and treatments is repeated over time as a risk prevention protocol over longer durations of time between repeated treatments.							
10. The treatmen	t method of claim 1, when	ein the emitted acoustic	shock waves are low energy soft waves.				
11. The treatmen 0.4 mJ/mm<2>.	t method of claim 10, whe	erein the low energy soft	waves have an energy density in a range of 0.01 mJ/mm<2 >to				
12. The treatment >to 0.3 mJ/mm<	nt method of claim 11, whe 2>.	erein the low energy soft	waves have an energy density in the range of 0.04 mJ/mm<2				
13. The treatmen waves per therap	nt method of claim 1, when	ein each subjected reflex	ology zone receives between 100 and 2000 acoustic shock				

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14. The treatment wherein the patie	nt method of claim 1, where ent was exhibiting high leve	ein the modulated blood els of blood sugar.	sugar level response is a decrease in the blood sugar level				
15. The treatment wherein the patie	nt method of claim 1, where ent was exhibiting low leve	in the response to stimu ls of insulin production.	lating insulin production is an increase in insulin release				
16. The treatmer was exhibiting h	nt method of claim 1, where high levels of A1C spikes.	in the response of norm	alizing A1C levels is a decrease in spikes wherein the patient				
17. The treatment planar, focused of ballistic or water invasively or not	nt method of claim 1, where or unfocused from a source r jets configured to produce ninvasively.	in the acoustic shock wa with or without a lens th an acoustic shock wave	aves are spherical, radial, convergent, divergent, planar, near nat is one of electrohydraulic, electromagnetic, piezoelectric, and wherein the acoustic shock waves are administered				
18. The treatmer planar, near plan piezoelectric, ba administered nor	18. The treatment method of claim 1, wherein the emitted acoustic shock waves are spherical, radial, convergent, divergent, planar, near planar, focused or unfocused from a source with or without a lens that is one of electrohydraulic, electromagnetic, piezoelectric, ballistic or water jets configured to produce an acoustic shock wave and wherein the acoustic shock waves are administered noninvasively.						
19. A treatment is sugar levels com- activating an acc administering ac- underlies the pat subjecting the re- specific gland by emitted shock w modulated respo- blood sugar leve wherein the emit comprise an ene amplitude are be part of a cycle.	method of treating a human prises the steps of: bustic shock wave generator coustic shock waves to a tar- tient's skin in a region of a h effexology zone to acoustic star- y emitting the acoustic shoc raves from the shock wave a onse is an adjustment in bloc- el wherein the patient was ex- tted acoustic shock waves a argy density of 0.00001 mJ/r elow 100 nano-seconds with	a patient exhibiting high r with a shock wave app get site which is a reflex hand or foot and the reflex shock waves stimulating where the tissue of applicator causing the sp od sugar levels wherein xhibiting high levels of l the focused or unfocused mm<2 >to 1.0 mJ/mm<2 h a duration of the acous	or low blood sugar levels by achieving modulating blood licator to emit acoustic shock waves; sology zone of a patient, wherein the reflexology zone exology zone lies in the path of the emitted shock waves by: g a patient's tissue at a reflexology location corresponding to a the hand or foot at the reflexology zone is in the path of the ecific gland-to have a modulated response wherein the the modulated blood sugar level response is a decrease in the blood sugar; and acoustic shock waves, the emitted acoustic shock waves 2 >and an amplitude above 0.1 MPa and rise times of the tic shock waves being below 3 micro-seconds for a positive				
20. A treatment is levels comprises activating an acc administering ac underlies the pat subjecting the re specific gland by emitted shock w modulated response insulin release w wherein the emit comprise an ene amplitude are be part of a cycle.	method of treating a human the steps of: bustic shock wave generator coustic shock waves to a tary tient's skin in a region of a h flexology zone to acoustic st y emitting acoustic shock w vaves from the shock wave a onse is an adjustment in insu- wherein the patient was exhi- tted acoustic shock waves a rgy density of 0.00001 mJ/r elow 100 nano-seconds with	a patient exhibiting high r with a shock wave app get site which is a reflex hand or foot and the refle shock waves stimulating raves to the tissue of the applicator causing the sp alin production wherein biting low levels of insu re focused or unfocused mm<2 >to 1.0 mJ/mm<2 h a duration of the acous	or low insulin production by stimulating insulin production licator to emit acoustic shock waves; ology zone of a patient, wherein the reflexology zone exology zone lies in the path of the emitted shock waves by: g a patient's tissue at a reflexology location corresponding to a hand or foot at the reflexology zone is in the path of the ecific gland-to have a modulated response wherein the the response to stimulating insulin production is an increase in lin production; and acoustic shock waves, the emitted acoustic shock waves 2 >and an amplitude above 0.1 MPa and rise times of the tic shock waves being below 3 micro-seconds for a positive				
21. A treatment steps of:	method of treating a human	patient exhibiting abno	rmal A1C levels by normalizing A1C levels comprises the				

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activating an acc administering ac underlies the pat subjecting the re specific gland by emitted shock wa modulated respo the patient was e wherein the emit comprise an ener amplitude are be part of a cycle.	pustic shock way oustic shock way ient's skin in a r flexology zone we mitting the ac aves from the sh nse is normalizi xhibiting high 1 ted acoustic sho rgy density of 0 low 100 nano-s	ve generator with a showes to a target site wh egion of a hand or foo to acoustic shock waves coustic shock waves to nock wave applicator of ng A1C levels wherei evels of A1C spikes; a ock waves are focused .00001 mJ/mm<2 >to econds with a duration	ock wave appli- ich is a reflexed and the reflexed es stimulating the tissue of t causing the spe- n the response and or unfocused a 1.0 mJ/mm<2 n of the acousti	cator to emit acoustic shock waves; ology zone of a patient, wherein the reflexology zone kology zone lies in the path of the emitted shock waves by: a patient's tissue at a reflexology location corresponding to a he hand or foot at the reflexology zone is in the path of the crific gland-to have a modulated response wherein the of normalizing A1C levels is a decrease in spikes wherein acoustic shock waves, the emitted acoustic shock waves >and an amplitude above 0.1 MPa and rise times of the c shock waves being below 3 micro-seconds for a positive		
DN0330PROV		62687528	June 20, 203	8 ACOUSTIC SHOCK WAVE THERAPEUTIC METHODS TO PREVENT OR TREAT OPIOID		
DN0330		16353278	March 14, 2019	John F. Warlick, John Patrick Finney		
<u>US 2019-0209427 A1</u> 07/11/2019 US patent <u>11,389,373</u> 07/19/2022 Maint Fee open 07/19/2025						
The method of treating a patient addicted to pain medication or opioids has the step administering acoustic shock waves or pressure pulses to the patient. A second embodiment includes a treatment to reduce a patient's pain caused by a medical condition and/or medical procedure to reduce or eliminate the taking of addictive pain medication. The treatment has the step of administering acoustic shock waves or pressure pulses directed to an area near a source of the pain or to one or more reflexology zones or to one or more reflexology zones and to an area near the source of the pain or both to treat the medical condition or prior to the medical procedure or during the medical procedure or after the medical procedure or any combination thereof.						
1. A method of treating opioid or non-opioid addictive pain drug addicted patient comprises the steps of: activating an acoustic shock wave generator to emit acoustic shock waves; treating the addicted patient with the acoustic shock waves emitted by the acoustic shock waves generator, wherein the acoustic shock waves comprise a low pulse energy of 0.00001 mJ/mm<2 >or higher up to 1.0 mJ/mm<2 >and an amplitude above 0.1 MPa and rise times of the amplitude are below 100 nano-seconds with a duration of the acoustic shock waves being below 3 micro- seconds for a positive part of a cycle; and the step of treating the addicted patient with the acoustic shock waves comprising subjecting adrenal glands of the addicted patient through a surface of a skin with the acoustic shock waves to modulate hormonal levels of the addicted patient by reducing adrenalin and cortisol levels in order to minimize withdrawal symptoms from the opioid or non-opioid addictive pain drug.						
2. The method of	f claim 1 where	in the acoustic shock w	waves are direc	eted towards a source of a chronic pain.		
3. The method of	f claim 1 where	in the acoustic shock w	waves are direc	eted to one or more reflexology zones of the hands or feet.		
4. The method of claim 3 wherein the acoustic shock waves are directed to an entire hand or foot for systemic relief.						

5. The method of claim 4 wherein the step of treating the addicted patient with acoustic shock waves reduces systemic inflammation, reduces anxiety, and improves sleep.

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6 The method of	claim 5 wherein the withdraw	al symptoms are mi	nimized by stimulating the beta and/or alpha recentors which	
have a same symp	ptomatic relief as pharmaceuti	cal beta blockers.	minized by sumulating the beta and/or alpha receptors when	
7. The method of directly targeting	claim 3 further comprises the pathologic tissues of the patie	step of: recruiting, and the step of the s	activating and differentiating stem cells of the patient by ng the reflexology zones of the patient.	
8. The method of systemic inflamm	claim 3 further comprises the ation by treating one or more	step of: modulating of the reflexology z	inflammation locally by a direct targeting, or by modulating ones.	
9. The method of subjecting a locati source of pain or reducing patient a suppressing pain of focused or unfocu	claim 1 further comprises the ion near a source of pain or to in the reflexology zone to have nxiety by stimulating alpha ar or activating an anesthetic effe- used acoustic shock waves.	step of: a reflexology zone e a modulated respo nd/or Beta adrenergi cct over a period of f	to the acoustic shock waves to stimulate an area near the onse, wherein the modulated response is one or more of ic receptors to control and reduce high stress and anxiety or time; and wherein the emitted acoustic shock waves are	
10. The method o zone directed to n minimize withdra	f claim 9 wherein the administ nodulate a response to the pair wal symptoms from opioid or	tration of emitted sh to suppress urges t non-opioid addictiv	nock waves is additionally directed to an area of the reflexology to take opioid or non-opioid addictive pain drug and to re pain drug.	
DN0330PCT	PCT/US19/30141 05/01/2	019	<u>WO 2019/245652</u> 12/26/2019	
DN0332PROV	62696022	July 10, 2018	IMPROVED ACOUSTIC SHOCK WAVE THERAPEUTIC METHODS	
DN0332	17287630	04/22/2021	John F. Warlick, John Mullins, David Dean	
US 2021-0393476	5 A1 12/23/2021			
Status: pre-exam	processing US national file	d 04/22/2021 (PCT	filed 05/01/2019)	
A method of treating an infected implant by administering acoustic shock waves to an implant area or region encompassing an implantation, includes the steps of activating acoustic shock waves of an acoustic shock wave generator to emit acoustic shock waves and subjecting the implant area to acoustic shock waves stimulating the implant area or region. The emitted acoustic shock waves are focused or unfocused acoustic shock waves, or acoustic pressure waves, generated electrohydraulically, electromagnetically, radially, or via a piezo electric generating system.				
1. A method of treating an infected implant by administering acoustic shock waves to an implant area or region encompassing an implantation, comprises the steps of: activating acoustic shock waves of an acoustic shock wave generator to emit acoustic shock waves; subjecting the implant area to acoustic shock waves stimulating the implant area or region; and wherein the emitted acoustic shock waves are focused or unfocused acoustic shock waves.				
2. The method of	claim 1 wherein the implant a	rea underlies the pa	tient's skin.	

Docket Number	USPTO Serial Number	Filing Date	Title			
3. The method of liquid.	claim 2 wherein the shock	wave generator is acou	stically coupled to the patient's skin using a coupling gel or			
4. The method of implant.	claim 1 wherein the impla	int area is one of a ventr	icular assist device, driveline, hip implant, or other joint			
5. The method of destroying biofilm	claim 1 wherein the stimu ns, staphylococcus or othe	lating of the implant are r infectious organisms.	ea causes a release of nitric oxide and reduces infection by			
6. The method of to VGEF.	claim 5 wherein the stimu	lating of the implant are	ea causes a release of growth factors including, but not limited			
7. The method of vascularization.	claim 6 wherein the stimu	lating of the implant are	a causes new blood vessels to be created increasing			
8. The method of	claim 1 is repeated one or	more times.				
9. The method of	claim 1 wherein the emitte	ed acoustic shock waves	s are low energy soft waves.			
10. The method o mJ/mm square.	f claim 9 wherein the low	energy soft waves have	an energy density in the range of 0.01 mJ/mm<2 >to 0.4			
11. The method o mJ/mm square.	f claim 10 wherein the low	v energy soft waves hav	e an energy density in the range of 0.04 mJ/mm<2 >to 0.3			
12. The method o session.	f claim 1 wherein the impl	lant area or region recei	ves between 100 and 2000 acoustic shock waves per therapy			
13. The method o	f claim 4 wherein the impl	lant area is a heart pump	driveline.			
DN0332PCT	PCT/US19/30158 05/	01/2019	<u>WO 2020/013905</u> 01/16/2020			
CA filing 302639	CA filing 3026392 ref # P8207CA00 annuity paid 12/2022					
DN0336PROV	62730608	Sept 13, 2018	ACOUSTIC SHOCK WAVE THERAPEUTIC METHODS TO TREAT MEDICAL CONDITIONS USING REELENCLOCY ZONES			
DN0336	16353365	March 14, 2019				
			Jonn F. Warlick, John Patrick Finney			

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Docket Number	USPTO Serial Number	Filing Date (day/month/year)	Title	
<u>US 201</u>	<u>9-0209431 A1</u> 07/11/201	9 US patent <u>1</u>	t <u>11,458,069</u> 10/04/2022	
Maint Fee open 10/04/2025				
A treatment method to reduce or eliminate a patient's symptoms caused by a medical condition or disease is disclosed. The treatment has the step of administering acoustic shock waves or pressure pulses directed to one or more reflexology zones or to one or more reflexology zones and an area near a source of the pain if any is exhibited to treat the medical condition. The treatment further has the steps of activating acoustic shock waves or pressure pulses of an acoustic shock wave or pressure pulse generator to emit acoustic shock waves or pressure pulses and subjecting the one or more reflexology zones or the one or more reflexology zones and the area near a source of the medical condition or pain, if any is exhibited, to acoustic shock waves or pressure pulses to treat the medical condition.				
1. A treatment method to treat a human patient's symptoms caused by a medical condition, the medical condition include an eosinophilic disorder of an internal organ, the treatment comprises the steps of: activating an acoustic shock wave generator with a shock wave applicator to emit acoustic shock waves; administering acoustic shock waves to a target site which is a reflexology zone of a patient, wherein the reflexology zone underlies the patient's skin in a region of a hand or foot or ear and the reflexology zone lies in the path of the emitted shock waves by: subjecting the reflexology zone to acoustic shock waves stimulating a patient's tissue at the reflexology zone corresponding to the internal organ experiencing the medical condition by emitting the acoustic shock waves from the shock wave applicator to cause a positive biologic response to treat the medical condition wherein the positive biologic response includes one or more of reducing or eliminating systemic or local inflammation and/or initiating, activating or recruiting stem cells, wherein stimulating the one reflexology zone or the reflexology zone and an area near a source of the medical condition causing a release of growth factor (VEGF) and wherein stimulating the reflexology zone or the reflexology zone and an area near a source of the medical condition causing a release of growth factors including vascular endothelial growth factor (VEGF) and wherein stimulating the reflexology zone or the reflexology zone and an area near a source of the medical condition causing new blood vessels to be created which would increase vascularization; and wherein the emitted acoustic shock waves are focused or unfocused acoustic shock waves, the emitted acoustic shock waves comprise an energy density of 0.00001 mJ/mm<2 >to 1.0 mJ/mm<2 >and an amplitude above 0.1 MPa and rise times of the				
amplitude are below 100 nano-seconds with a duration of the acoustic shock waves being below 3 micro-seconds for a positive part of a cycle.				
2. The treatment method of claim 1 wherein the acoustic shock wave generator is acoustically coupled to the patient's skin using a coupling gel or liquid.				
3. The treatment method of claim 1 further comprising the step of stimulating the reflexology zone corresponding to the medical condition with a sufficient amount of acoustic shock waves to stimulate the orthopedic structure to cause the reflexology zone or the reflexology zone and the area near a source of the medical condition causes a stimulation or modulation of adrenergic receptors a and p and one or more of a release of nitric oxide, secretion of digestive enzymes, inflammation reduction, hormonal regulation and peptide recruitment and activation.				
4. The treatment method of claim 1 is repeated one or more times to treat the medical condition.				
5. The treatment method of claim 1 wherein the emitted acoustic shock waves or pressure pulses are low energy soft waves.				
6. The treatment method of claim 5 wherein the low energy soft waves have an energy density in the range of 0.01 mJ/mm<2 >to $1.0 \text{ mJ/mm}$ <2>.				

7. The treatment method of claim 6 wherein the low energy soft waves have an energy density in the range of 0.04 mJ/mm < 2 > to

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0.5 mJ/mm<2>				
8. The treatment waves or pressu	8. The treatment method of claim 1 wherein the subjected reflexology zone receives between 100 and 100,000 acoustic shock waves or pressure pulses per therapy session.			
9. The treatment method of claim 1 wherein the emitted acoustic shock waves or pressure pulses are spherical, radial, convergent, divergent, planar, near planar, focused or unfocused from a source with or without a lens that is one of electrohydraulic, electromagnetic, piezoelectric, ballistic or water jets configured to produce an acoustic shock wave and wherein the acoustic shock waves or pressure pulses are administered invasively or noninvasively.				
10. The treatment method of claim 4 wherein the number of repeated treatments occur on a schedule over a period of one or more weeks, and treatments are repeated over time as a pain prevention protocol over longer durations of time between repeated treatments.				
11. The treatment method of claim 1 wherein the medical condition further comprising an auto immune indication and/or disorder.				
12. The treatment method of claim 1 wherein the medical condition further comprising one of disorders of chronic local and systemic inflammation, congestive heart or lung failure, high or low eosinophils, Nocturia and benign prostatectomy hyperplasia, incontinence, interstitial cystitis, Trigonitis, Crohns, Rheumatoid arthritis, Multiple Sclerosis, irritable bowel syndrome, Primary myelofibrosis, Polycythemia vera, Thrombocythemia, Chronic Myelogenous Leukemia, Chronic Myelocytic Leukemia, Chronic Myeloid Leukemia, Chronic Granulocytic Leukemia, Sickle cell anemia.				
13. The treatment method of claim 1 wherein the medical condition further comprising one of erectile dysfunction, reduced urine flow, or Nocturia, wherein Nocturia is defined as urinating at least 2 times per night.				
14. The treatment method of claim 1 wherein the eosinophilic disorder is an eosinophilic disorder with elevated levels of eosinophils including one or more of Allergic disorders, Infections by parasites, cancers, asthma, allergic rhinitis, atopic dermatitis, Hodgkin lymphoma, leukemia, myeloproliferative disorders, Eosinophilic pneumonia of a lung, Eosinophilic cardiomyopathy of a heart, Eosinophilic esophagitis of an esophagus, Eosinophilic gastritis of a stomach, Eosinophilic enteritis of a small intestine.				
15. The treatment method of claim 1 wherein the emitted acoustic shock waves or pressure pulses have an energy density in the range of 0.01 mJ/mm<2 >to 0.50 mJ/mm<2>.				
16. The treatment method of claim 1 wherein the medical condition further comprising one of auto immune indications and/or disorders, disorders of chronic local and systemic inflammation, congestive heart or lung failure, high or low eosinophils, Nocturia, benign prostatectomy hyperplasia, incontinence, interstitial cystitis, Trigonitis, Crohns, Rheumatoid arthritis, Multiple Sclerosis, irritable bowel syndrome, Primary myelofibrosis, Polycythemia vera, Thrombocythemia, Chronic Myelogenous Leukemia, Chronic Myelocytic Leukemia, Chronic Myeloid Leukemia, Chronic Granulocytic Leukemia, Sickle cell anemia, Autism, Spina Bifida, Attention Deficit Hyperactivity Disorder, Hemorrhoids, Autism tremors, liver cancer, migraine, cystic fibrosis, Parkinson's disease, Colitis, Chronic Obstructive Pulmonary Disease, bronchitis, Lyme disease, Tip toe disease, Gall bladder infection, heart disease, Allergic disorders, Infections, Infections by parasites, cancers, asthma, allergic rhinitis, atopic dermatitis, Hodgkin lymphoma, leukemia, myeloproliferative disorders, Eosinophilic pneumonia of a lung, Eosinophilic cardiomyopathy of a heart, Eosinophilic esophagitis of an esophagus, Eosinophilic gastritis of a stomach, Eosinophilic enteritis of a small intestine.				
DN0336PCT	PCT	C/US19/3014	8 filed 05/01/201	9 <u>WO 2020/055458</u> 03/19/2020
CA filing 302	6371 ref#	P8201CA0	0 annuity paid	12/2022

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Docket Number	USPTO Serial Number	Filing Date (day/month/year)	Title	
DN0346	16367989	03/28/2019	A HANDHELD ACOUSTIC SHOCK WAVE OR PRESSURE PULSE APPLICATION DEVICE AND METHODS OF USE	
LIS motort 11 211	454 04/26/2022		John F. Warnek	
US patent <u>11,311,454</u> 04/26/2022 Maint fee open 04/26/2025				
Abstract: A handheld acoustic shock wave or pressure pulse applicator device has a body structure and an applicator head. The body structure has a proximal end and a distal end with a longitudinal axis extending between the ends. The applicator head is at the distal end. the head emits pressure pulses or shock waves at an inclined angle relative to the longitudinal axis of the body structure. The applicator head has a balloon or lens or membrane through which the emitted pressure pulses or shock waves pass. The lens or membrane is configured to be coupled directly or indirectly to an exposed soft tissue surface of a palate inside a patient's mouth to direct emitted pressure pulses or shock waves to the brain. The applicator device can be configured with the inclined obtuse angle fixed between 150 degrees and 90 degrees or can be adjustable between 180 degrees and 90 degrees.				
2. The applicator device of claim 1 wherein the inclined angle is obtuse fixed between 150 degrees and 90 degrees.				
3. The applicator device of claim 1 wherein the inclined angle is adjustable between 180 degrees and 90 degrees.				
4. The applicator device of claim 1 wherein a shock wave generator emits the shock wave through the applicator head by either electro hydraulic, electromagnetic, piezoelectric or ballistic wave emissions.				
5. The applicator device of claim 4 wherein the wave emissions are focused, divergent, convergent, radial, spherical or unfocused waves.				
6. The applicator device of claim 1 further comprises: a light.				
7. The applicator device of claim 6 wherein the light is an LED, light emitting diode.				

Docket Number	USPTO Serial Number	Filing Date (day/month/year)	Title		
8. The applicator	device of claim 7 wherein	the LED is in an upper	surface of the applicator head structure.		
9. The applicator device of claim 1 wherein the device is disposable after a single use.					
10. The applicator device of claim 1 wherein the pair of electrodes are replaceable electrodes for refurbishing the device after use.					
11. The applicator device of claim 1 wherein the pair of electrodes are fixed electrodes which are not adjustable and are pre-set at fixed gaps.					
12. The applicator device of claim 1 wherein the pair of electrodes are adjustable electrodes.					
13. The applicator device of claim 12 wherein the adjustable electrodes include one or more adjustment means, the means being magnets, piezo ceramic or motors with gear boxes, pneumatic or hydraulic to change a tip distance between the adjustable electrodes.					
14. The applicator device of claim 1 further comprises: a reflector.					
15. The applicator device of claim 14 wherein the reflector is a generalized paraboloid.					
16. The applicator device of claim 14 wherein the reflector is an ellipsoid.					
17. The applicator device of claim 16 wherein the wave emissions are transmitted at high energy or low energy.					
18. The applicator device of claim 1 wherein the pivotable portion is connected to the body structure main portion via a pin and a nut, the pin and nut when tightened down fix the pivotable portion to be bent at any desired angle between 90 and 270 degrees.					
19. The applicator device of claim 1 wherein applicator head structure and pivotable portion when assembled have a pair of electrical connectors that are slid through openings that will make contact with the electrical connectors completing a circuit.					
20. The applicator device of claim 19 wherein the electrodes pass through an insulator sleeve and into the openings of the applicator head structure and when so positioned, ends of the electrodes are exposed.					
21. The applicator device of claim 1 further comprises a boot, the boot encircles and seals the assembly of the applicator head structure to the pivotable portion.					
22. The applicator device of claim 1 wherein the electrical cord is bifurcated into two portions forming a "Y" shape with a pair of electrical couplings crimped onto the "Y" shape portions.					
23. The applicator device of claim 22 wherein electrical wiring of the electrical cord is passed through an opening in the body structure main portion of the device, the electrical couplings are crimped tightly onto exposed wire ends.					
24. The applicator device of claim 23 wherein on each side of the pivoting connection are a pair of electrical connections, these electrical connections pass through a slot and are connected to the electrical couplings.					
25. The applicator device of claim 1 further comprises a pair of O-rings that couple to grooves in the applicator device, the O-rings, when positioned, provide an air-tight seal for the membrane filled with a fluid creating an electrohydraulic shock wave applicator.					
26. The applicator device of claim 1 wherein the longitudinal body structure main portion has a cover that covers the electrical components once the device is assembled.					

Docket Number	USPTO Serial Number	Filing Date (day/month/year)	Title	
27. The applicator device of claim 1 wherein LED's, light emitting diodes, are positioned on a top and one or both sides of the device.				
28. The applicator device of claim 1 wherein an LED is provided within an electrode chamber and the lens or covering membrane is translucent or transparent such that the LED is easily seen by the operator.				
DN0350PROV DN0350	62852683 16879979	05/24/2019	DEVICE AND METHODS TO DESTROY BACTERIA, MOLDS, FUNGI AND VIRUSES AND FOR REDUCING INFLAMMATION AND MARKERS IN ORGANS AND TISSUE AND TO EXTEND THE UTILITY OF ANTIBIOTICS	
			John F. Warlick	
Status: 06/01/2023 advisory action US publication <u>US2020368377</u> (A1) — 2020-11-26				
A method of treating a patient having inflammation or an infection from bacteria or molds or fungi or virus by destroying bacteria or molds or fungi or virus has the step of directing one or more sound wave treatments into the patient to destroy bacteria or molds or fungi or virus. The sound wave treatments cause an improved blood supply, a disruption of cellular membranes and a cellular communication causing the patient's cells to identify and attack the bacteria, mold fungi or virus and further causes recruiting or stimulating an increase in anti-microbial peptides. The method further can have the step of administering medications to the patient including, but not limited to anti-viral medications, antibiotics, anti-fungal medications or anti-mold medications, wherein the sound wave treatment extends the useful life of the medications.				
<ol> <li>A method of treating a patient having an infection from bacteria or molds or fungi or virus by destroying bacteria or molds or fungi or virus comprising the step of: directing one or more sound wave treatments into the patient to destroy bacteria or molds or fungi or virus.</li> </ol>				
2. The method of claim 1 wherein the sound wave treatments cause an improved blood supply, a disruption of cellular membranes and a cellular communication causing the patient's cells to identify and attack the bacteria, mold fungi or virus and further causes recruiting or stimulating an increase in anti-microbial peptides.				
3. The method of claim 1 further comprises the step of: administering medications to the patient including, but not limited to anti-viral medications, antibiotics, anti-fungal medications or anti-mold medications, wherein the sound wave treatment extends the useful life of the medications.				
4. The method of claim 3 wherein the sound wave treatments increase the permeability of the patient's cell membranes allowing an increase in releasing anti-microbial peptides and inflow of the medications into the cells while increasing the blood supply toward the infection.				
5. The method of claim 3 wherein the sound wave treatment is provided either prior to, during or after administering medications or any combination thereof.				
6. The method of claim 5 wherein the infection's resistance to medications is reduced by the sound wave treatments.				
7. The method of claim 5 wherein the medications effectiveness against the infection is enhanced by the sound wave treatments.				
8. The method of claim 5 wherein the dosages or strength of the medications can be reduced when used in combination with the				

sound wave treatments.

#### TRT Page 72 of 101 **TRT USPTO Patent Filings** Docket **USPTO** Serial Filing Date Title Number (day/month/year) Number 9. The method of claim 1 wherein the sound waves are acoustic shock waves. 10. The method of claim 9 wherein the acoustic shock waves are focused or non-focused, convergent, divergent, planar or nearly planar, radial or spherical, shaped or otherwise reflected. 11. The method of claim 10 wherein the sound wave treatments are emitted by a generator. 12. The method of claim 11 wherein the generator is one of a radial, a spherical, a ballistic, a linear, a piezoelectric, or an electrohydraulic generator. 13. The method of claim 1 wherein the sound wave treatments can be administered with or without cavitation. 14. The method of claim 1 wherein the sound wave treatments can be administered with or without some cellular destruction and with or without a sensation of pain. 15. The method of treating a patient diagnosed with one or more infections of a microbial or viral source, the infections causing at least localized inflammation, the method comprises the steps of: locating a region or location of the infection; activating a pressure pulse or acoustic shock wave generating source; and emitting pressure pulses or acoustic shock waves and directing the pressure pulses or acoustic shock waves to impinge the inflammation directly or by indirectly impinging a reflexology zone to destroy, fracture, fragment or otherwise open the microbial or viral source to eradicate the source and reduce the inflammation. 16. The method of claim 15 further comprises the step of: stimulating cells of a host to initiate a cellular response within the host when the host is a living being with organs and tissues having a cellular structure, the stimulated cells assist in absorbing or otherwise eradicating the microbial or viral source. fragment or otherwise open the microbial or viral source to eradicate the source and reduce the inflammation. 17. The method of claim 15 wherein the emitted pressure pulses or acoustic shock waves impinge the underlying bacterial or viral organisms destroying or rupturing their outer membranes to germicidally kill the organisms. 18. The method of claim 15 further comprises the step of: administering one or more drugs, antibiotics or other medication to the host. 19. The method of claim 15 further comprises the step of: surgically exposing the region or location of the infection. 20. The method of treatment of claim 15 wherein the emitted pressure pulses or acoustic shock waves are focused or non-focused waves of convergent, divergent, planar or near planar pattern. 21. The method of treatment of claim 15 wherein the emitted pressure pulses or acoustic shock waves are convergent having one or more geometric focal volumes of points at a distance of at least X from the generator or source, the method further comprising positioning the organ at a distance at or less than the distance X from the source. 22. The method of treatment of claim 15 further comprises the step of: administering one or more medications prior, during or after subjecting the patient to pressure pulses or acoustic shock waves. 23. The method of treatment of claim 15 further comprises the step of:

subjecting a tissue or organ to a surgical procedure to remove some or all of an infection growth.
Docket	USPTO Serial	Filing Date	Title	
Number	Number	(day/month/year)		
24. The method of reproductive, dig	estive, intestinal, neurolog	ical or periodontal.	a system including the cardiovascular, urological,	
25. The method of antimicrobial per	of claim 15 wherein the pre ptides LL37	essure pulses or acoustic	shock waves cause an upregulation or increase of	
26. The method of	of claim 15 wherein the inf	ection is generally non-r	responsive to medications.	
27. A method of directing one or r	treating a patient having in more sound wave treatmen	flammation comprising ts into the patient toward	the step of: I the inflammation.	
28. The method of membranes and a eliminate the infl	of claim 27 wherein the sou a cellular communication c lammation.	and wave treatments cau ausing the patient's cells	se an improved blood supply, a disruption of cellular to identify the source of the inflammation and to reduce or	
29. The method of administering method anti-mold medica	of claim 27 further comprised in the patient inclusion of the patient inclusions, wherein the sound w	ses the step of: luding, but not limited to vave treatment extends t	o anti-viral medications, antibiotics, anti-fungal medications or he useful life of the medications.	
30. The method of an increase in rel toward the inflam	of claim 29 wherein the sou leasing anti-microbial pepti nmation.	and wave treatments incr ides and inflow of the mo	rease the permeability of the patient's cell membranes allowing edications into the cells while increasing the blood supply	
31. The method of medications or an	of claim 29 wherein the sound of claim 29 wherein the sound of the sou	and wave treatment is pr	ovided either prior to, during or after administering	
32. The method of	of claim 31 wherein the inf	lammation's resistance to	o medications is reduced by the sound wave treatments.	
33. The method of treatments.	of claim 31 wherein the me	dications effectiveness a	against the inflammation is enhanced by the sound wave	
34. The method of sound wave treat	of claim 31 wherein the doatments.	sages or strength of the r	nedications can be reduced when used in combination with the	
35. The method of	of claim 27 wherein the sou	und waves are acoustic s	hock waves.	
36. The method of claim 35 wherein the acoustic shock waves are focused or non-focused, convergent, divergent, planar or nearly planar, radial or spherical, shaped or otherwise reflected.				
37. The method of claim 36 wherein the sound wave treatments are emitted by a generator.				
38. The method of claim 37 wherein the generator is one of a radial, a spherical, a ballistic, a linear, a piezoelectric, or an electrohydraulic generator.				
39. The method of	of claim 27 wherein the sou	and wave treatments can	be administered with or without cavitation.	
40. The method of with or without a	of claim 27 wherein the sou a sensation of pain.	and wave treatments can	be administered with or without some cellular destruction and	

TRT USPTO Patent Filings			
Docket Number	USPTO Serial Number	Filing Date (day/month/year)	Title
DN0354 prov DN0354	62878455 16935361	07/25/2019 07/22/2020	A METHOD OF TREATING THE LOWER SPINE TO REDUCE OR ELIMINATE REFERRED OR NON- SPECIFIC PAIN (GHOST PAIN) IN THE PELVIS AND ABDOMEN INCLUDING THE BLADDER, PROSTATE, TESTICLES, GENITALIA AND DIGESTIVE TRACT
			John F. Warlick

Status: 06/12/2023 Appeal Brief filed

<u>US2021022956</u> (A1) 2021-01-28

A method of treating a patient exhibiting lower spine stenosis, inflammation, injury or disease has the steps of: activating an acoustic shock wave generator or source to emit acoustic shock waves from a shock wave head; and administering a plurality of acoustic shock waves in a pulse or wave pattern having a low energy density of less than 1.0 mJ/mm2 per shock wave directly onto a portion of a lower spine exhibiting chronic pain and inflammation. The chronic pain and inflammation radiates from the lower spine region to other organs causing chronic pain of one or more of an abdomen, a pelvis, or a groin and the step of administering a plurality of acoustic shock waves to the lower spine reduces chronic pain and inflammation radiating at the lower spine and further reduces chronic pain including orchialgia, prostatitis and bladder pain.

1. A method of treating a patient exhibiting abdominal or pelvic pain by applying shockwaves or acoustic pulses to the lower spine, lumbar and sacral spine, to modulate, reduce or relieve spinal stenosis, inflammation, injury or disease and comprises the steps of:

activating an acoustic shock wave or acoustic wave generator or source to emit acoustic shock waves or pulses from a fixed acoustic wave source or a handheld shock wave head or from electrodes embedded within a catheter with or without a fluid filled balloon catheter; and

administering a plurality of acoustic shock or acoustic waves in a pulse or wave pattern within the targeted tissue of less than 10.0 mJ/mm<2 >per shock wave, the plurality of acoustic shock or acoustic waves in a pulse or wave pattern should be directed to a portion of a lower spine exhibiting chronic pain and/or inflammation.

2. The method of claim 1 wherein the chronic pain and inflammation radiates from the lower spine region to other organs or connective tissue causing acute or chronic pain in the organs or connective tissue of the abdomen, pelvis, or genitalia.

3. The method of claim 1 wherein the step of administering a plurality of acoustic or shock waves to the lower spine reduces chronic pain and inflammation radiating at the lower spine and further reduces chronic pain including orchialgia, prostatitis, bladder pain, interstitial cystitis or digestive tract pain.

4. The method of claim 1 wherein the chronic pain and inflammation at the lower spine region radiates causing ghost or referred pain defined as non-specific pain at other organs or connective tissue and/or parts of the body and wherein the method further comprises the step of reducing ghost pain by administering the plurality of acoustic shock waves to the lower spine and locations at or near the areas exhibiting the ghost pain.

5. The method of claim 1 wherein the treatment is directed to treat women experiencing PGAD.

6. The method of claim 1 wherein the treatment is directed to treat patients having premature ejaculations.

TRT USPTO Patent Filings			
Docket Number	USPTO Serial Number	Filing Date (day/month/year)	Title
DN0356PROV DN0356	62932756 17097166	11/08/2019 11/13/2020	DEVICE AND METHODS TO DESTROY BACTERIA, MOLDS, FUNGI AND VIRUSES AND FOR REDUCING INFLAMMATION AND MARKERS IN ORGANS AND TISSUE AND TO EXTEND THE UTILITY OF ANTIBIOTICS
			John F. Warlick

Status: 06/07/2023 response to non final <u>US2021059696</u> (A1) - 2021-03-04

A method of treating a patient having inflammation or an infection from bacteria or molds or fungi or virus by destroying bacteria or molds or fungi or virus has the step of directing one or more sound wave treatments into the patient to destroy bacteria or molds or fungi or virus. The sound wave treatments cause an improved blood supply, a disruption of cellular membranes and a cellular communication causing the patient's cells to identify and attack the bacteria, mold fungi or virus and further causes recruiting or stimulating an increase in anti-microbial peptides. The method further can have the step of administering medications to the patient including, but not limited to anti-viral medications, antibiotics, anti-fungal medications or anti-mold medications, wherein the sound wave treatment extends the useful life of the medications.

1. A method of treating a patient having an inflammation, infection from bacteria or molds or fungi or virus or cancerous cells by destroying bacteria or molds or fungi or virus or cancerous cells comprising the step of: directing one or more sound wave treatments into the patient targeting the inflammation, infection, mold, virus, bacteria or fungi to cause a body to identify these as foreign objects and trigger the body's own natural healing mechanisms to destroy the foreign objects.

2. The method of claim 1 wherein the sound wave treatments include an improved long and short term blood supply, these mechanisms include both short and long term improvements in blood supply, an up regulation of anti-microbial peptides, especially peptide LL 37, a disruption of biofilms that protect these foreign objects, and an increase in cellular communication such that healthy cells identify these foreign objects as targets of the body's natural defenses, as the improved blood supply allows a body to deliver natural defenses and increases the supply of medications administered by a physician or other medications, a disruption of cellular membranes, increased cell membrane permeability, and an improvement in cellular communication causing the patient's cells to identify and attack the bacteria, mold, fungi or virus and further causes recruiting or stimulating an increase in anti-microbial peptides.

3. The method of claim 1 further comprises the step of:

administering medications to the patient including, but not limited to anti-viral medications, antibiotics, anti-fungal medications or anti-mold medications or anti-cancer medications, wherein the sound wave treatment improves the utility of these medications by increasing the amounts of these medications to the affected cells by increasing the short term and permanent blood supply to the cells and increasing the cellular communication to cause the body to aid in the fight against the foreign material.

4. The method of claim 3 wherein the sound wave treatments increase the permeability of the patient's cell membranes allowing an increase in releasing anti-microbial peptides and inflow of the medications into the cells while increasing the blood supply toward the infection.

5. The method of claim 3 wherein the sound wave treatment is provided either prior to, during or after administering medications or any combination thereof.

6. The method of claim 5 wherein the infection's resistance to medications is reduced by the sound wave treatments or the cellular permeability is increased to allow an increased amount of medicine to enter the cell or an increased amount of a body's natural

Docket Number	USPTO Serial Number	Filing Date (day/month/year)	Title		
defenses to enter	the cell, wherein the impro	oved permeability allows	more chemo to enter a cancerous cell.		
7. The method of or cancer is enha	f claim 5 wherein the media inced by the sound wave tra	cations effectiveness aga eatments.	inst the infection, or inflammation, or mold, or virus, or fungi,		
8. The method of sound wave treat	f claim 5 wherein the dosag tments.	ges or strength of the me	dications can be reduced when used in combination with the		
9. The method of	f claim 1 wherein the sound	d waves are acoustic sho	ck waves or pressure pulses.		
10. The method divergent, planar	of claim 9 wherein the acou or nearly planar, radial or	ustic shock waves or press spherical, shaped, linear	ssure pulses are focused or non-focused, convergent, or otherwise reflected or directed.		
11. The method	of claim 10 wherein the sou	and wave treatments are	emitted by a generator or any mechanical device.		
12. The method piezoelectric, or	of claim 11 wherein the ger an electrohydraulic or elec	nerator or mechanical de tromagnetic generator.	vice is one of a radial, a spherical, a ballistic, a linear, a		
13. The method	of claim 1 wherein the sour	nd wave treatments can b	e administered with or without cavitation.		
14. The method with or without a	of claim 1 wherein the sour a sensation of pain.	nd wave treatments can b	e administered with or without some cellular destruction and		
15. The method of treating a patient diagnosed with one or more infections of a microbial or viral source or foreign object such as mold, fungi or cancer, the infections causing at least localized inflammation, the method comprises the steps of: locating a region or location of the infection; activating a pressure pulse or acoustic shock wave generating source; and emitting pressure pulses or acoustic shock waves and directing the pressure pulses or acoustic shock waves to impinge/decrease the inflammation or infection directly or by stimulating a reflexology zone in the hands or feet to trigger the body to destroy or reduce the inflammation, inflammation or foreign object.					
16. The method of stimulating cells having a cellular source by fragmo inflammation.	16. The method of claim 15 further comprises the step of: stimulating cells of a host to initiate a cellular response within the host when the host is a living being with organs and tissues having a cellular structure, the stimulated cells assist in absorbing or otherwise eradicating the microbial or viral or foreign object source by fragmentation or otherwise opening the microbial or viral or foreign object source to eradicate the source and reduce the inflammation.				
17. The method of claim 15 wherein the emitted pressure pulses or acoustic shock waves impinge the underlying bacterial or viral or cancerous organisms destroying or rupturing their outer membranes exposing the organisms to a body's natural defenses or additional medications including chemotherapy and radiation.					
18. The method of claim 15 further comprises the step of: administering one or more drugs, antibiotics, chemotherapy or other medication to the host.					
19. The method of claim 15 further comprises the step of: surgically exposing the region or location of the infection or inflammation or cancer.					
20. The method waves of one of	of treatment of claim 15 wh convergent, divergent, sphe	herein the emitted pressu erical, linear, planar or ne	re pulses or acoustic shock waves are focused or non-focused ear planar pattern, or any combination thereof.		
21. The method of treatment of claim 15 wherein the emitted pressure pulses or acoustic shock waves are convergent having one					

Docket Number	USPTO Serial Number	Filing Date (day/month/year)	Title		
or more geometr positioning the o	ic focal volumes of points a organ at a distance at or less	at a distance of at least X s than the distance X from	X from the generator or source, the method further comprising m the source.		
22. The method administering on	of treatment of claim 15 fun ne or more medications prio	rther comprises the step or, during or after subjec	of: ting the patient to pressure pulses or acoustic shock waves.		
23. The method subjecting a tissu	of treatment of claim 15 fun- ue or organ to a surgical pro-	rther comprises the step ocedure to remove some	of: or all of an infection growth.		
24. The method reproductive, dig	of claim 15 wherein the reg gestive, intestinal, neurolog	gion or location is part of ical or periodontal.	f a system including the cardiovascular, urological,		
25. The method antimicrobial per	of claim 15 wherein the pre ptides LL37.	essure pulses or acoustic	shock waves cause an upregulation or increase of		
26. The method	of claim 15 wherein the inf	ection is generally non-	responsive to medications.		
27. A method of directing one or	treating a patient having in more sound wave treatmen	Iflammation comprising ts into the patient toward	the step of: d the inflammation.		
28. The method membranes or ar to identify the so or foreign object	28. The method of claim 27 wherein the sound wave treatments cause an improved blood supply, a disruption of cellular membranes or an increased permeability of the cellular membrane, or increase cellular communication causing the patient's cells to identify the source of the inflammation or infection or cancer and to reduce or eliminate the inflammation, infection, or cancer or foreign object.				
29. The method administering me anti-mold medic	29. The method of claim 27 further comprises the step of: administering medications to the patient including, but not limited to anti-viral medications, antibiotics, anti-fungal medications or anti-mold medications, wherein the sound wave treatment extends the useful life of the medications.				
30. The method of claim 29 wherein the sound wave treatments increase the permeability of the patient's cell membranes allowing an increase in releasing anti-microbial peptides and inflow of the medications into the cells while increasing the blood supply toward the inflammation.					
31. The method medications or a	31. The method of claim 29 wherein the sound wave treatment is provided either prior to, during or after administering medications or any combination thereof.				
32. The method	32. The method of claim 31 wherein the inflammation's resistance to medications is reduced by the sound wave treatments.				
33. The method of claim 31 wherein the medications effectiveness against the inflammation is enhanced by the sound wave treatments.					
34. The method of claim 31 wherein the dosages or strength of the medications can be reduced when used in combination with the sound wave treatments.					
35. The method of claim 27 wherein the sound waves are acoustic shock waves or pressure pulses.					
36. The method convergent, dive combination the	of claim 35 wherein the acc rgent, planar or nearly plan reof.	oustic shock waves or pr ar, radial or spherical, s	ressure pulses are focused or non-focused and one of haped or otherwise reflected or directed patterns or any		

37. The method of claim 36 wherein the sound wave treatments are emitted by a generator.

#### **TRT USPTO Patent Filings** Docket **USPTO** Serial Filing Date Title Number Number (day/month/year) 38. The method of claim 37 wherein the generator is one of a radial, a spherical, a ballistic, a linear, a piezoelectric, or an electrohydraulic or electro magnetic generator. 39. The method of claim 27 wherein the sound wave treatments can be administered with or without cavitation. 40. The method of claim 27 wherein the sound wave treatments can be administered with or without some cellular destruction and with or without a sensation of pain. 41. The method of claim 28 wherein the inflammation is caused by one or more tumors and the patient's natural defenses are stimulated to reduce or eliminate the one or more tumors. 42. The method of claim 28 wherein the treatment is directed to the prostate or heart or inflamed tissue or any other organ including the skin reduces inflammation levels, and causes the PSA level of the prostate to be reduced decreasing or eliminating a cancer risk and causes the inflammation in the heart to be reduced preventing heart disease. 43. A method of treating a heart and/or arterial vascular plaque comprises the treating by sound waves the heart or arterial vascular system to stimulate the body to stop the recruitment of plaque or calcification to the aorta or heart, and causing the body to reabsorb the plaque or calcifications. 44. The method of claim 1 wherein the one or more sound wave treatments when directed to cancerous cells activates the natural defenses of the body to attack and destroy other cancer cells throughout the body. 45. The method of claim 44 wherein the exposure of the body to one or more sound wave treatments destroys the cancer cells within the body and vaccinates the patient from new cancer risk as the natural defenses of the body are programmed to identify and destroy cancer cells as foreign objects. DN0359PROV 62963371 01/20/2020 A METHOD OF TREATING THE LUNGS DN0359 16830924 03/26/2020 John F. Warlick, John Patrick Finney Status: 05/22/2023 non final rejection US2021137543 (A1) - 2021-05-13 A method of treating a patient exhibiting a lung disease or pulmonary disorder by applying shock waves or acoustic pulses directed to impinge lung tissue of the lung or lungs exhibiting a lung disease or pulmonary disorder, has the steps of: activating an acoustic shock wave or acoustic wave generator or source to emit acoustic shock waves or pressure pulses from a fixed

an acoustic shock wave or acoustic wave generator or source to emit acoustic shock waves or pressure pulses from a fixed acoustic wave source or a handheld shock wave or pressure pulse head; and administering a plurality of acoustic waves in a pressure pulse or shock wave pattern within the lung tissue of less than 10.0 mJ/mm2 per shock wave, the plurality of acoustic waves in a pressure pulse or shock wave pattern being directed to a portion of the lung exhibiting the lung disease or pulmonary disorder.

1. A method of treating a patient exhibiting a lung disease or pulmonary disorder by applying shock waves or acoustic pulses directed to impinge lung tissue of the lung or lungs exhibiting a lung disease or pulmonary disorder, comprises the steps of:

Docket Number	USPTO Serial Number	Filing Date (day/month/year)	Title			
activating an acous fixed acoustic wav administering a plu fixed acoustic wav mJ/mm<2 >per sho wave pattern being	activating an acoustic shock wave or acoustic wave generator or source to emit acoustic shock waves or pressure pulses from a fixed acoustic wave source or a handheld shock wave or pressure pulse head; and administering a plurality of acoustic waves in a pressure pulse or shock wave pattern from an exit window or membrane of the fixed acoustic wave source or a handheld shock wave or pressure pulse head coupled to the patient's skin of less than 10.0 mJ/mm<2 >per shock wave or pressure pulse toward the lung tissue, the plurality of acoustic waves in a pressure pulse or shock wave pattern being directed to a portion of the lung exhibiting the lung disease or pulmonary disorder.					
2. The method of c pulses to the lung f	claim 1 wherein the step of further reduces symptoms	of administering a plural s of the lung disease or p	ity of acoustic waves delivered as shock waves or pressure pulmonary disorder.			
3. The method of c Pulmonary Disease apnea, pleurisy, pn	claim 1 wherein the lung of (COPD), cystic fibrosis, eumonia, or tuberculosis	disease or pulmonary di , emphysema, Idiopathio (TB).	sorder is one of asthma, bronchitis, Chronic Obstructive c pulmonary fibrosis (IPF), flu, lung cancer, obstructive sleep			
4. The method of c to an area of the lu	laim 1 wherein the treatn ng, or to a reflexology zo	nent further comprises a ne to treat the lung dise	dministering acoustic shock waves or pressure pulses directed ase or pulmonary disorder.			
5. The method of c	claim 1 wherein the reflex	ology zone is at an extr	emity of a limb.			
6. The method of c	elaim 1 wherein the extrem	nity is a hand or foot.				
7. The method of c window or membra skin are less than 1	elaim 1 wherein the plural ane of the fixed acoustic .0 mJ/mm<2 >per shock	ity of acoustic waves in wave source or handhele wave or pressure pulse.	the pressure pulse or shock wave pattern from the exit d shock wave or pressure pulse head coupled to the patient's			
8. The method of c applicator source is	laim 1 wherein the acous s a spherical device.	tic shockwave or acoust	tic wave generator or source or handheld applicator or fixed			
9. The method of c applicator source is	laim 1 wherein the acous s a ballistic device.	tic shockwave or acoust	tic wave generator or source or handheld applicator or fixed			
10. The method of applicator source is	claim 1 wherein the acoust a radial device.	stic shockwave or acou	stic wave generator or source or handheld applicator or fixed			
11. The method of applicator source is	claim 1 wherein the acoust an electrohydraulic dev	istic shockwave or acou	stic wave generator or source or handheld applicator or fixed			
12. The method of applicator source is	12. The method of claim 1 wherein the acoustic shockwave or acoustic wave generator or source or handheld applicator or fixed applicator source is a piezoelectric device.					
13. The method of claim 1 wherein the acoustic shockwave or acoustic wave generator or source or handheld applicator or fixed applicator source is a laser device.						
14. The method of claim 1 wherein the acoustic shockwave or acoustic wave generator or source or handheld applicator or fixed applicator source is an electromagnetic device.						
15. The method of applicator source is	15. The method of claim 1 wherein the acoustic shockwave or acoustic wave generator or source or handheld applicator or fixed applicator source is an ultrasound device.					
16. The method of applicator source is	claim 1 wherein the acoust a hybrid ultrasound dev	istic shockwave or acou ice.	stic wave generator or source or handheld applicator or fixed			

TRT USPTO Patent Filings					
Docket Number	USPTO Serial	Filing Date	Title		
17. The method of applicator source	Number       Number       (day/month/year)         17. The method of claim 1 wherein the acoustic shockwave or acoustic wave generator or source or handheld applicator or fixed applicator source is a pulsed wave device.         18. The method of claim 1 wherein the acoustic shockwave or acoustic wave generator or source or handheld applicator or fixed				
19. A method to i lung or lungs, con activating an acou fixed acoustic wa administering a p fixed acoustic wa mJ/mm2 per shoc wave pattern beir	<ul> <li>applicator source is a continuous wave device.</li> <li>19. A method to improve lung capacity by applying shock waves or acoustic pulses or continuous waves directed to tissue of the lung or lungs, comprises the steps of:</li> <li>activating an acoustic shock wave or acoustic wave generator or source to emit acoustic shock waves or pressure pulses from a fixed acoustic wave source or a handheld shock wave or pressure pulse head; and</li> <li>administering a plurality of acoustic waves in a pressure pulse or shock wave pattern from an exit window or membrane of the fixed acoustic wave source or a handheld shock wave or pressure pulse head coupled to the patient's skin of less than 10.0 mJ/mm2 per shock wave or pressure pulse toward the lung tissue, the plurality of acoustic waves in a pressure pulse or shock wave pattern being directed to a portion of the lung.</li> </ul>				
DN0359PCT F	CT/US20/24898 filed 0	3/26/2020	WO 2021/091590 05/14/2021		
DN0363PROV	63011653	04/17/2020	A METHOD OF TREATING THE BLOOD		
DN0363	17223585	04/06/2021	John F. Warlick, Nikolaus Hopfenzitz		
Status: 08/23/20	21 ready for examination	<u>US 2021</u>	<u>-0322664</u> A1 10/21/2021		
A method of stimulating human blood external of a patient donor comprises the steps of: activating an acoustic shock wave or pressure pulse generator to emit acoustic shock waves or pressure pulses directed to impinge the blood; subjecting the blood to the acoustic shock waves or pressure pulses to form stimulated blood cells; and transfusing the stimulated blood cells into the patient donor. (Virus)					
<ol> <li>A method of stimulating human blood external of a patient donor comprises the steps of: activating an acoustic shock wave or pressure pulse generator to emit acoustic shock waves or pressure pulses directed to impinge the blood; subjecting the blood to the acoustic shock waves or pressure pulses to form stimulated blood cells; and transfuring the stimulated blood cells into the patient donor.</li> </ol>					
2. The method of	<ol> <li>The method of claim 1 wherein the patient donor is infected with a virus and the blood exhibits at least traces of the virus.</li> </ol>				
3. The method of fragment the viru	claim 2 wherein the emitted a s in the blood.	coustic shock waves	s or pressure pulses stimulating the stimulated blood cells		
4. The method of immune response	claim 3 wherein the fragment to kill the virus.	ed virus in the blood	l transfused back into the patient donor triggers a defensive		

#### **TRT USPTO Patent Filings** Docket **USPTO** Serial Filing Date Title (day/month/year) Number Number 5. The method of claim 1 wherein the emitted acoustic shock waves or pressure pulses are of a low energy. 6. The method of claim 1 wherein the emitted shock waves or pressure pulses stimulate the blood cells and fragment the virus in the absence of cell damaging cavitation due to an elasticity in the blood cells and a lack of elasticity in the virus. 7. The method of claim 1 wherein the blood is not filtered. 8. The method of claim 1 wherein the blood can be oxygenated via Extracorporeal membrane oxygenation (ECMO) after being stimulated. 9. A composition of transfusable blood comprises: a quantity of blood for transfusions; and a plurality of fragmented viruses fragmented by acoustic shock waves or pressure pulses dispersed in the quantity of blood. 10. The composition of claim 9 wherein the plurality of fragmented viruses when transfused into a virus infected patient activates a defensive immune response to kill the virus in the transfused patient. A METHOD OF TREATING UNINTENDED PARALYSIS DN0386PROV 63211081 06/16/2021 CAUSED BY BOTOX DN0386 17750748 05/23/2022 John F. Warlick Status: 07/08/2022 ready for examination US2022401294 (A1) - 2022-12-22 A method of treating a patient exhibiting paralysis by applying shockwaves or acoustic pulses to the affected region to reduce or relieve unintended paralysis has the steps of: activating an acoustic shock wave or acoustic wave generator or source to emit acoustic shock waves or pulses from a fixed acoustic wave source or a handheld shock wave head or from electrodes embedded within a catheter with or without a fluid filled balloon catheter; and administering a plurality of acoustic shock or acoustic waves in a pulse or wave pattern within the targeted tissue of less than 10.0 mJ/mm2 per shock wave, the plurality of acoustic shock or acoustic waves in a pulse or wave pattern should be directed to a portion of the affected region. 1. A method of treating a patient exhibiting a reaction to Botox by applying shockwaves or acoustic pulses to an affected region,

1. A method of treating a patient exhibiting a reaction to Botox by applying shockwaves or acoustic pulses to an affected region, to reduce or relieve unintended paralysis of muscles within the affected region comprises the steps of:

activating an acoustic shock wave or acoustic wave generator or source to emit acoustic shock waves or pulses from a fixed acoustic wave source or a handheld shock wave head or from electrodes embedded within a catheter with or without a fluid filled balloon catheter; and

administering a plurality of acoustic shock or acoustic waves in a pulse or wave pattern within the affected region of less than  $10.0 \text{ mJ/mm} \le 2$  per shock wave, the plurality of acoustic shock or acoustic waves in a pulse or wave pattern are directed to a portion of an affected region exhibiting the unintended paralysis of the muscles.

2. The method of claim 1 wherein the paralysis radiates from the affected region to adjacent connective tissue causing paralysis in the adjacent connective tissue.

## **TRT USPTO Patent Filings** Docket **USPTO** Serial Filing Date Title Number Number (day/month/year) 3. The method of claim 1 wherein the step of administering a plurality of acoustic or shock waves to the paralysis radiating at the affected region further reduces chronic pain, numbness and inflammation of the affected region. METHOD AND DEVICE TO PRESERVE ORGANS AND TISSUE FOR TRANSPLANTATION DN0391 17825179 05/26/2022 John F. Warlick, John Mullins, David Dean Status: 06/22/2022 ready for examination A method of treating a harvested organ or tissue for preservation for implantation into a patient has the steps of, harvesting an organ or tissue from a donor; placing the harvested organ or tissue into a container; filling the container with a fluid for preservation; sealing the container once filled; directing one or more sound wave treatments into the container to destroy bacteria or molds or fungi or virus and to stimulate the organ or tissue; and storing the container at a hypothermic temperature of about 4 degrees C for storage prior to implantation. 1. A method of treating a harvested organ or tissue for preservation for implantation into a patient comprising the steps of: harvesting an organ or tissue from a donor; placing the harvested organ or tissue into a container; filling the container with a fluid for preservation; sealing the container once filled; directing one or more sound wave treatments into the container to destroy bacteria or molds or fungi or virus and to stimulate the organ or tissue; and storing the container at a hypothermic temperature of about 4 degrees C for storage prior to implantation. 2. The method of claim 1, wherein the container is configured to transmit sound waves through the container to the preservation fluid and the organ or tissue contained therein. 3. The method of claim 2, wherein the container is a flexible bag. 4. The method of claim 1, wherein the step of directing the one or more sound wave treatments includes placing an acoustic shock wave or pressure pulse emitting applicator against an external surface of the container. 5. The method of claim 1, wherein prior to sealing the container a vacuum is generated or the fluid overfilled to remove any

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residual air.		<u> </u>			
6. The method o tension the bag a	of claim 5, wherein the cont nd create a positive pressur	tainer is a flexible bag an re inside the bag.	nd after sealing, secondarily sealing a perimeter of the bag to		
7. The method o membranes and a fungi or virus and	of claim 1, wherein the sour a cellular communication c d further causes recruiting	nd wave treatments caus ausing the cells of the or or stimulating an increas	e an improved blood supply, a disruption of cellular rgan or tissue to identify and attack the bacteria or mold or se in anti-microbial peptides.		
8. The method o	of claim 1 further comprises	s the step of:			
adminis medications or an	tering medications into the nti-mold medications, when	container including, bu rein the sound wave trea	t not limited to anti-viral medications, antibiotics, anti-fungal tment extends the useful life of the medications.		
9. The method o allowing an increase and medications	of claim 3 wherein the soun ease in releasing anti-micro toward the bacteria or mole	d wave treatments increa bial peptides and inflow d or fungi or virus.	ase the permeability of the organ or tissue cell membranes of the medications into the cells while increasing the fluid		
10. The method medications or an	of claim 8 wherein the sou ny combination thereof.	nd wave treatment is pro	ovided either prior to, during or after administering		
11. The method	of claim 10 wherein an inf	ection's resistance to me	edications is reduced by the sound wave treatments.		
12. The method sound wave treat	of claim 11 wherein the flu ements.	uid preservative and mee	lication's effectiveness against the infection is enhanced by the		
13. The method sound wave treat	of claim 8 wherein the dos	ages or strength of the n	nedications can be reduced when used in combination with the		
14. The method	of claim 1 wherein the sou	nd waves are acoustic sl	nock waves or pressure pulses.		
15. The method nearly planar, rac	15. The method of claim 14 wherein the acoustic shock waves are focused or non-focused, convergent, divergent, planar or nearly planar, radial or spherical, shaped or otherwise reflected.				
16. The method	16. The method of claim 1 wherein the sound wave treatments are emitted by a generator.				
17. The method of claim 16 wherein the generator is one of a radial, a spherical, a ballistic, a linear, a piezoelectric, or an electrohydraulic generator.					
18. The method	18. The method of claim 1 wherein the sound wave treatments can be administered with or without cavitation.				
19. The method with or without a	of claim 1 wherein the sou a sensation of pain.	nd wave treatments can	be administered with or without some cellular destruction and		
20. A method of infections causin	f treating an organ or tissue g at least localized inflamn	of for transplantation with nation, the method comp	one or more infections of a microbial or viral source, the prises the steps of:		

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harvesting an org	gan or tissue from a donor;				
locating	g a region or location of the	infection;			
activati	ng a pressure pulse or acou	stic shock wave generati	ng source; and		
emitting the inflammation microbial or vira	g pressure pulses or acousti a directly or by indirectly ir al source to eradicate the so	c shock waves and direc npinging the organ or tis urce and reduce the infla	ting the pressure pulses or acoustic shock waves to impinge sue to destroy, fracture, fragment or otherwise open the mmation;		
placing the harve	ested organ or tissue into a	container;			
filling t	he container with a fluid fo	r preservation;			
sealing	the container once filled;				
directing one or a organ or tissue; a	more sound wave treatmen and	ts into the container to de	estroy bacteria or molds or fungi or virus and to stimulate the		
storing	the container at a hypother	mic temperature of about	t 4 degrees C for storage prior to implantation.		
.21. The method	l of claim 20 further compr	ises the step of:			
adminis	stering one or more drugs, a	antibiotics or other medic	cation to the organ or tissue.		
22. The method or more geometr positioning the o	of treatment of claim 20 w ic focal volumes of points a organ at a distance at or less	herein the emitted pressu at a distance of at least X than the distance X from	The pulses or acoustic shock waves are convergent having one a from the generator or source, the method further comprising n the source.		
23. The method	of treatment of claim 20 fu	orther comprises the step	of:		
subjecti	ing a tissue or organ to a su	rgical procedure to remo	we some or all of an infection growth.		
24. The method	24. The method of claim 20 wherein the sound waves are acoustic shock waves or pressure pulses.				
25. The method of claim 24 wherein the acoustic shock waves are focused or non-focused, convergent, divergent, planar or nearly planar, radial or spherical, shaped or otherwise reflected.					
26. The method of claim 20 wherein the sound wave treatments are emitted by a generator.					
27. The method residual air.	of claim 20, wherein prior	to sealing the container a	a vacuum is generated or the fluid overfilled to remove any		
28. The method tension the bag a	of claim 27, wherein the co and create a positive pressure	ontainer is a flexible bag re inside the bag.	and after sealing, secondarily sealing a perimeter of the bag to		

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#### **TRT USPTO Patent Filings** Docket **USPTO** Serial Filing Date Title Number Number (day/month/year) ACOUSTIC SHOCK WAVE TREATMENT FOR 63344720 05/23/2022 ERECTILE DYSFUNCTION DN0392 18196636 05/12/2023 John F. Warlick, Irwin Goldstein Status: non-provisional A method of treatment for a penis of an adult postpubertal male patient, the treatment has of the steps of: causing an erection of a penis; activating an acoustic shock wave generator or source to emit low energy or unfocused acoustic shock waves and subjecting the erect penis to the acoustic shock waves stimulating said erect penis, the erect penis is positioned within a path of the emitted shock waves stimulating a cellular response. A method of treatment for a penis of an adult postpubertal male patient, the treatment comprising of the steps of: 1. causing an erection of a penis; activating an acoustic shock wave generator or source to emit low energy or unfocused acoustic shock waves, wherein the acoustic shock waves are waves having amplitudes above 0.1 MPa and rise times of the amplitude are below 100 nano-seconds with a duration of a shock wave being below 3 micro-seconds for the positive part of a cycle and wherein the pressure pulses are an acoustic pulse which includes several cycles of positive and negative pressure with amplitudes of the positive part of such a cycle being above 0.1 MPa and the pressure pulse time duration is from below a microsecond to about a second, rise times of the positive part of the first pressure cycle is in the range of nano-seconds up to several milli-seconds; and subjecting the erect penis to the acoustic shock waves stimulating said erect penis, the erect penis is positioned within a path of the emitted shock waves stimulating a cellular response. 2. The method of treatment of claim 1 wherein the emitted shock waves or pressure pulses are convergent, divergent, planar or near planar. The method of treatment of claim 1 wherein the emitted shock waves or pressure pulses are convergent having one or 3. more geometric focal volumes or points located at a distance X, X being defined as the distance from an exit window to the one or more focal volumes or points from the generator or source, the erect penis being positioned at the distance X or less than the distance X from the exit window source. 4. A method of treatment for increasing testosterone levels and increasing sperm count and viability in an adult postpubertal male patient comprising of the steps of: testing the testosterone and sperm count and viability of a patient prior to treatment to establish a pre-treatment baseline level; activating an acoustic shock wave or pressure pulse generator or source to emit low energy or unfocused acoustic shock waves or pressure pulses, wherein the acoustic shock waves are waves having amplitudes above 0.1 MPa and rise times of the amplitude are below 100 nano-seconds with a duration of a shock wave being below 3 micro-seconds for the positive part of a cycle and

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wherein the press of the positive parabout a second, ri seconds;	wherein the pressure pulses are an acoustic pulse which includes several cycles of positive and negative pressure with amplitudes of the positive part of such a cycle being above 0.1 MPa and the pressure pulse time duration is from below a microsecond to about a second, rise times of the positive part of the first pressure cycle is in the range of nano-seconds up to several milli- seconds;					
subjecting a testic testosterone level waves stimulating	subjecting a testicle through the scrotum to the acoustic shock waves or pressure pulses stimulating said testicle to increase testosterone levels and increase sperm count and viability, wherein the testicle is positioned within a path of the emitted shock waves stimulating a cellular response without creating cavitation bubbles insuring no hemorrhaging;					
testing the testoste acoustic shock wa	erone level and sperm count aves or pressure pulses to est	and viability of the pa ablish a post treatmen	atient within 72 hours after subjecting the testicle to the nt level; and			
comparing the pre	e-treatment baseline level to	the post treatment lev	el tested after treatment to establish any increase.			
DN0397	63391938 18196643	07/25/2022 05/12/2023	ACOUSTIC SHOCK WAVE TREATMENT AND DEVICES FOR APPENDAGES John F. Warlick, Irwin Goldstein			
Status: non-provisional						
An improved method of treating an appendage of a patient using acoustic shock waves has the steps of: providing an appendage in need of an acoustic shock wave treatment; placing an acoustic shock wave applicator on a surface of the appendage; placing a gaseous filled membrane on an opposite surface of the appendage; activating an acoustic shock wave generator or source to emit acoustic shock waves from an acoustic shock wave applicator; and wherein the acoustic shock wave is transmitted from the acoustic shock wave applicator through the surface sending the emitted acoustic shock waves into the tissue of the appendage and exiting the opposite surface of the appendage to the gaseous filled membrane where a reflection of the acoustic shock wave occurs sending reflected acoustic shock waves back through the appendage.						
1. An improved method of treating an appendage of a patient using acoustic shock waves comprises the steps of:						
providing an appendage in need of an acoustic shock wave treatment;						
placing an acoustic shock wave applicator on a surface of the appendage;						
placing a	placing a gaseous filled membrane on an opposite surface of the appendage;					
activatin applicator; and	g an acoustic shock wave ge	nerator or source to e	mit acoustic shock waves from an acoustic shock wave			
wherein	wherein the acoustic shock wave is transmitted from the acoustic shock wave applicator through the surface sending the					

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emitted acoustic shock waves into the tissue of the appendage and exiting the opposite surface of the appendage to the gaseous filled membrane where a reflection of the acoustic shock wave occurs sending reflected acoustic shock waves back through the appendage.

2. The method of treating an appendage of a patient using acoustic shock waves of claim 1, wherein the step of activating the acoustic shock wave generator or source emits low energy or unfocused acoustic shock waves, wherein the acoustic shock waves are waves having amplitudes above 0.1 MPa and rise times of the amplitude are below 100 nano-seconds with a duration of a shock wave being below 3 micro-seconds for the positive part of a cycle and wherein the pressure pulses are an acoustic pulse which includes several cycles of positive and negative pressure with amplitudes of the positive part of such a cycle being above 0.1 MPa and the pressure pulse time duration is from below a microsecond to about a second, rise times of the positive part of the first pressure cycle is in the range of nano-seconds up to several milli-seconds.

3. The method of treating an appendage of a patient using acoustic shock waves of claim 1 further includes subjecting the appendage to the acoustic shock waves stimulating said appendage, the appendage is positioned within a path of the emitted shock waves stimulating a cellular response.

4. The method of treating an appendage of a patient using acoustic shock waves of claim 1, wherein the gaseous filled membrane has an internal chamber filled with air, nitrogen or other inert gas, the chamber having a thickness of at least 1 cm or more.

5. The method of treating an appendage of a patient using acoustic shock waves of claim 4, wherein the gaseous filled membrane has an elastomeric conformable exterior surface that conforms to the shape of the surface when pressed against the appendage.

6. The method of treating an appendage of a patient using acoustic shock waves of claim 1, wherein the method further comprises the step of:

applying an acoustic gel to the surfaces of the appendage and the acoustic shock wave applicator and the gaseous filled membrane to acoustically couple the surfaces to enhance transmission of the acoustic shock waves.

7. The method of treating an appendage of a patient using acoustic shock waves of claim 6 further comprises the step of:

holding or pressing the applicator and the gaseous filled membrane firmly against opposing surfaces of the appendage to enhance the acoustic coupling.

8. The method of treating an appendage of a patient using acoustic shock waves of claim 7, wherein the acoustic shock wave applicator is electrohydraulic and has a fluid filled flexible membrane.

9. The method of treating an appendage of a patient using acoustic shock waves of claim 7, wherein the gaseous filled membrane is one of a balloon, or a mitten or a glove with the gaseous filled membrane on a palm side of the mitten or glove, and the method further comprises the step of holding the balloon against the appendage or donning the mitten or glove and holding the appendage against the palm side to reflect or absorb the emitted shock waves.

10. The method of treating an appendage of a patient using acoustic shock waves of claim 1 wherein the appendage is of one of a hand, a foot, a penis, or a scrotum.

11. The method of treating an appendage of a patient using acoustic shock waves of claim 10, wherein the appendage is a penis of an adult post pubertal male and the penis exhibits erectile dysfunction.

12. The method of treating an appendage of a patient using acoustic shock waves of claim 1, wherein the emitted shock waves or

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pressure pulses ar	e convergent, divergent, pla	nar or near planar.			
13. The me waves or pressure defined as the dist penis being positi	13. The method of treating an appendage of a patient using acoustic shock waves of claim 1, wherein the emitted shock waves or pressure pulses are convergent having one or more geometric focal volumes or points located at a distance X, X being defined as the distance from an exit window to the one or more focal volumes or points from the generator or source, the erect penis being positioned at the distance X or less than the distance X from the exit window source.				
14. The me temperature of the	thod of treating an appenda e appendage being treated to	ge of a patient using a o change tissue impeda	coustic shock waves of claim 1, further comprises lowering the nee to improve tissue stimulation		
·····p································	appendinge comg nomen in	oninge neede inpen			
DN0400PR OV	63430795	08/30/2022	ENERGIZED BEVERAGE		
D1104001 KO V	05+50775	00/30/2022	John F. Warlick		
Status: provisional					
A treatment for fluids or liquids, more particularly beverages. The treatment uses acoustic shock waves to impart a molecular change in the beverage.					
1. A method of s	timulating and energizing a	fluid comprises the sto	eps of:		
activatin impinge the fluid	g an acoustic shock wave or ; and	r pressure pulse genera	tor to emit acoustic shock waves or pressure pulses directed to		
subjectir	ng the fluid to the acoustic s	hock waves or pressur	e pulses to form a stimulated and energized fluid.		
2. The method of claim 1, wherein the emitted acoustic shock waves or pressure pulses are of a low energy.					
3. The method of claim 1, wherein the emitted shock waves or pressure pulses are convergent, divergent, planar or near planar.					
4. The method of claim 1, wherein the emitted shock waves or pressure pulses stimulate the fluid in the absence of cavitation.					
5. The method of unfocused acousti the amplitude are cycle and wherein amplitudes of the	claim 1, wherein the step of ic shock waves, wherein the below 100 nano-seconds w the pressure pulses are an positive part of such a cycle	f activating the acoust acoustic shock waves ith a duration of a shoc acoustic pulse which i <u>e being above 0.1 MPa</u>	ic shock wave generator or source emits low energy or are waves having amplitudes above 0.1 MPa and rise times of ck wave being below 3 micro-seconds for the positive part of a neludes several cycles of positive and negative pressure with and the pressure pulse time duration is from below a		

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microsecond to al several milli-seco	pout a second, rise times of nds.	f the positive part of the	e first pressure cycle is in the range of nano-seconds up to		
6. A liquid bever	age having a composition	of stimulated energized	fluid comprises:		
a quantit	y of fluid; and				
enhanced	d molecules treated with a	coustic shock waves or	pressure pulses dispersed in the quantity of fluid.		
7. The liquid bev increased entropy	erage of claim 6, wherein	the quantity of fluid aft	er being treated with the acoustic shock waves exhibits an		
8. The liquid bev increasing the end	erage of claim 6, wherein ergy absorbed by a drinker	the enhanced molecules	s are stimulated to enhance absorption when consumed		
9. The liquid bev	erage of claim 6, wherein	the beverage is an alcol	nolic beverage.		
10. The liquid be	verage of claim 9, whereir	the alcoholic beverage	e is a beer, wine or whiskey.		
11. The liquid be	verage of claim 10, where	in an alcohol percentag	e is increased after the acoustic shock wave treatment.		
12. The liquid be	verage of claim 6 wherein	the beverage is a non-a	lcoholic energy booster drink.		
13. The liquid be	verage of claim 6 wherein	the beverage is water.			
DN0401	17949725	09/21/2022	ACOUSTIC SHOCK WAVE OR PRESSURE PULSE TREATMENT AND METHODS OF USE FOR BRAIN INFLAMMATION		
			John F. Warlick		
Status: 10/31/2022 ready for examination					

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A method of trea the steps of placi region at the brai swollen region; a to brain tissue ex	ating a traumatic brain injun- ing an applicator head of ar in injury; coupling the appl and activating the generator shibiting high pressure and	ry to reduce pressure and a acoustic shock wave of icator head directly or in r or source to emit press inflammation to reduce	I inflammation using pressure pulses or shock waves having pressure pulse generator or source on a head near a swollen adjrectly to an exposed surface of the skin and head near the ure pulses or acoustic shock waves through the skin and head the pressure and inflammation.		
1. A method of comprises the ste	treating a traumatic brain in eps of:	njury to reduce pressure	and inflammation using pressure pulses or shock waves		
placing region at the brai	an applicator head of an ac in injury;	coustic shock wave or pr	essure pulse generator or source on a head near a swollen		
couplin	g the applicator head direct	tly or indirectly to an exp	posed surface of the skin and head near the swollen region; and		
activati tissue exhibiting	ng the generator or source t high pressure and inflamm	to emit pressure pulses on the pressure of the	or acoustic shock waves through the skin and head to brain sure and inflammation.		
2. The method of through the head	of claim 1, wherein the emin to the brain.	tted pressure pulses or a	coustic shock waves are transmitted in a pattern passing		
3. The method of boney structure of	of claim 1, wherein the eminor of a cranium or skull.	tted pressure pulses or a	coustic shock waves pattern impinges the brain prior through a		
4. The method of negative pressure	f claim 1, wherein the press e.	sure pulse being an acou	stic pulse which includes several cycles of positive and		
5. The method of MPa and the time	of claim 4, wherein the pres e duration of the pressure p	ssure pulse has an amplit pulse is from below a mi	rude of the positive part of such a cycle should be above 0.1 crosecond to about a second.		
6. The method of up to some milli	of claim 5, wherein the rise seconds (ms).	times of the positive par	rt of the first pressure cycle in the range of nanoseconds (ns)		
7. The method of and rise times of	of claim 6 wherein the acou the amplitude being below	stic shock waves being 7 1000 ns.	very fast pressure pulses having amplitudes above 0.1 MPa		
. The method of a cycle and typic	. The method of claim 3, wherein the duration of the shock wave is typically below 1-3 microseconds ( $\mu$ s) for the positive part of a cycle and typically above some microseconds for the negative part of a cycle.				
9. The method of pressure pulses is creating cavitation neuronal cells with from any localize pulses either hav neuronal cells the point within the 10. The method	of claim 3, wherein subjection in the absence of a focal point on bubbles evidenced by not herein the neuronal cells are ed geometric focal volume are no geometric focal volume ereby passing the emitted we neuronal cells of the brain.	ing the brain to converge int impinging the neuror of experiencing the sensa re positioned within a pa or point of the emitted s ne or point or have a foc waves or pulses through	ent, divergent, planar or near planar acoustic shock waves or nal cells stimulating a cellular response in the absence of ation of hemorrhaging caused by the emitted waves or pulses in th of the emitted shock waves or pressure pulses; and away shock waves wherein the emitted shock waves or pressure al volume or point ahead of the neuronal cells or beyond the the neuronal cells while avoiding having any localized focal		
10. The method	of claim 1, wherein the em	itted pressure pulses or	snock waves are convergent, divergent, planar or near planar		

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and the pressure p wave generation l	bulse shock wave generator naving an energy density v	r or source is based on e alue ranging as low as (	electro-hydraulic, electromagnetic, piezoceramic or ballistic 0.00001 mJ/mm <sup>2</sup> to a high end of below 1.0 mJ/mm <sup>2</sup> .			
11. The method of than 1.0 mJ/mm <sup>2</sup> positioned directly focal point exists,	11. The method of claim 10, wherein subjecting the brain directly to the acoustic shock waves having a low energy density of less than 1.0 mJ/mm <sup>2</sup> per shock wave stimulates said neuronal cells or brain tissue wherein the neuronal cells or brain tissue is positioned directly within a path of the emitted pressure pulses or acoustic shock waves in the absence of any focal point or if a focal point exists, the neuronal cells or brain tissue being treated is positioned away from any focal point.					
12. The method of	of claim 11, wherein the er	nergy density is selected	to avoid any cell damage to the neuronal cells or brain tissue.			
<ul> <li>13. The method or regeneration when caused by injury or related to neurode sclerosis and dissocaused an increase</li> <li>14. The method or growth or regener neuronal cell or neuronal</li></ul>	<ul> <li>13. The method of claim 1, wherein treating the brain to stimulate by accelerating or increasing neuronal cell growth or regeneration wherein the administering is applied to a patient who has a pathological condition of the brain exhibiting damage caused by injury or disease such as diabetes, brain damage associated with stroke, and for the treatment of neurological disorders related to neurodegeneration, including Parkinson's disease, Alzheimer's disease and amyotrophic lateral sclerosis, multiple sclerosis and disseminated sclerosis, and for the treatment of bipolar disorder, depression, and schizophrenia any one of which has caused an increased pressure and inflammation which is reduced by the treatment.</li> <li>14. The method of treating the brain of claim 1 stimulates by accelerating and increasing neuronal cell neurological brain tissue growth or regeneration or repair in addition to reducing brain tissue swelling and pressure and inflammation and wherein the neuronal cell or neurological brain tissue is from a mammal which is a human or an animal.</li> </ul>					
DN0402	17964451	10/12/2022	ACOUSTIC SHOCK WAVE OR PRESSURE PULSE TREATMENT AND METHODS OF USE FOR ANTI- AGING			
			John F. Warlick			
Status: 11/18/2022 ready for examination						

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A method of trea applicator head of head directly or emit pressure pu aging and apoptor	iting a reflexology zone to of an acoustic shock wave of indirectly to an exposed sur- lses or acoustic shock wave osis.	reduce aging using press or pressure pulse generat rface of the skin near the es through the skin to the	sure pulses or shock waves has the steps of: placing an or or source at a reflexology zone; coupling the applicator reflexology zone; and activating the generator or source to e reflexology zone to reduce, reverse or stop cell senescence or
1. A method of	treating a reflexology zone	to reduce aging using pr	ressure pulses or shock waves comprises the steps of:
placing	an applicator head of an ac	coustic shock wave or pr	essure pulse generator or source at a reflexology zone;
couplin	g the applicator head direct	tly or indirectly to an exp	posed surface of the skin near the reflexology zone; and
activati zone to reduce, r	ng the generator or source t reverse or stop cell senescer	to emit pressure pulses once or aging and apoptos	r acoustic shock waves through the skin to the reflexology sis.
2. The method of negative pressure	f claim 1, wherein the press e.	sure pulse being an acou	stic pulse which includes several cycles of positive and
3. The method of MPa and the time	of claim 2, wherein the pressure pres	sure pulse has an amplit	ude of the positive part of such a cycle should be above 0.1 crosecond to about a second.
4. The method of up to some milli	of claim 3, wherein the rise seconds (ms).	times of the positive par	t of the first pressure cycle in the range of nanoseconds (ns)
5. The method of and rise times of	of claim 4, wherein the acount of claim 4, wherein the acount of the amplitude being below	ustic shock waves being v 1000 ns.	very fast pressure pulses having amplitudes above 0.1 MPa
6. The method of a cycle and typic	f claim 3, wherein the dura cally above some microsecc	tion of the shock wave is onds for the negative par	s typically below 1-3 microseconds ( $\mu$ s) for the positive part of t of a cycle.
7. The method of waves or pressur absence of creati or pulses in cells localized geomet have no geometr emitted waves or telomeres at end	of claim 1, wherein subjective pulses in the absence of a sing cavitation bubbles evides wherein the cells are positive focal volume or point or cic focal volume or point or r pulses through the skin was of chromosomes are leng	ing the reflexology zone a focal point impinging t enced by not experiencin- tioned within a path of th of the emitted shock wav have a focal volume or hile avoiding having any thened, thereby regenera	to convergent, divergent, planar or near planar acoustic shock he reflexology zone stimulating a cellular response in the ng the sensation of hemorrhaging caused by the emitted waves he emitted shock waves or pressure pulses; and away from any es wherein the emitted shock waves or pressure pulses either point ahead of the skin or beyond the skin thereby passing the v localized focal point within the skin, wherein shortened ting the telomeres reversing senescence in cells.
8. The method c and the pressure wave generation	of claim 1, wherein the emit pulse shock wave generate having an energy density v	tted pressure pulses or sl or or source is based on e value ranging as low as (	nock waves are convergent, divergent, planar or near planar electro-hydraulic, electromagnetic, piezoceramic or ballistic 0.00001 mJ/mm <sup>2</sup> to a high end of below 1.0 mJ/mm <sup>2</sup> .
9. The method of than 1.0 mJ/mm <sup>2</sup> path of the emitt reflexology zone	of claim 8, wherein subjecti <sup>2</sup> per shock wave stimulates ed pressure pulses or acous be being treated is positioned	ing the cells directly to the s said reflexology zone v stic shock waves in the a d away from any focal po	he acoustic shock waves having a low energy density of less wherein the reflexology zone is positioned directly within a bsence of any focal point or if a focal point exists, the bint.

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10. The method MHz.	of claim 1, wherein the free	quency of the emitted pr	ressure pulses or shock waves is in the range of .5 Hz to 15	
11. The method to 150 Hz.	of claim 10, wherein the fr	equency of the emitted j	pressure pulses or shock waves has a preferred range of 70 Hz	
12. The method regeneration or r	of claim 1, wherein treating repair.	g the reflexology zone s	timulates by accelerating and increasing cell growth or	
13. The method the hands, feet of	of claim 1, wherein the acc r ears to cause a positive bi	oustic shock waves or prologic response to treat	essure pulses are directed to one or more reflexology zones of the cells.	
14. The method hands or feet or o	of claim 13, wherein the ace	coustic shock waves or p	pressure pulses are directed to an entire surface of one or both	
15. The method using a coupling	of claim 14, wherein the sh gel or liquid.	nock wave or pressure p	ulse generator is acoustically coupled to the patient's skin	
16. The method reverses senesce	of claim 13, wherein the poince in cells.	ositive biologic response	e reduces or eliminates systemic or local inflammation and	
17. The method	of claim 13, wherein the po	ositive biologic response	e initiates, activates or recruits cells reversing senescence.	
18. The method cells causes a sti digestive enzyme	of claim 17, wherein stimul mulation or modulation of es, inflammation reduction,	lating the one or more readrenergic receptors $\alpha$ a hormonal regulation an	flexology zones or the one or more reflexology zones and the nd $\beta$ and one or more of a release of nitric oxide, secretion of d peptide recruitment and activation.	
19. The method the cells causes a	of claim 18, wherein the sti a release of growth factors i	mulating the one or mor including, but not limited	re reflexology zones or the one or more reflexology zones and d to VEGF.	
20. The method the cells causes i	of claim 18, wherein the sti new blood vessels to be crea	mulating the one or mor ated increasing vascular	re reflexology zones or the one or more reflexology zones and ization and reversing senescence.	
21. The method	of claim 13 is repeated one	or more times to treat a	nd reverse the senescence condition.	
22. The method	of claim 13, wherein the en	nitted acoustic shock wa	ves or pressure pulses are low energy soft waves.	
23. The method of claim 22, wherein the low energy soft waves have an energy density in the range of $0.01 \text{ mJ/mm}^2$ to $1.0 \text{ mJ/mm}^2$ .				
24. The method pressure pulses p	of claim 13, wherein each s per therapy session.	subjected reflexology zo	ne receives between 100 and 100,000 acoustic shock waves or	
25. The method and treatments ca	of claim 21, wherein the nu an be repeated over time as	umber of repeated treatm an anti-aging protocol o	ents occur on a schedule over a period of one or more weeks, over longer durations of time between repeated treatments.	
26. A method of	stimulating a cellular subst	ance wherein the cellula	ar substance is a patient having senescent cells or a culture of	

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senescent cells co	omprises the steps of:				
treating the cellu	lar substance;				
activating an acoustic shock wave generator or source to emit pressure pulses or acoustic shock waves directed toward the substance to impinge the substance with pressure pulses or shock waves having a low energy density in the range of 0.00001 mJ/mm <sup>2</sup> to 1.0 mJ/mm <sup>2</sup> ; the pressure pulse being an acoustic pulse which includes several cycles of positive and negative pressure, wherein the pressure pulse has an amplitude of the positive part of such a cycle should be above 0.1 MPa and the time duration of the pressure pulse is from below a microsecond to about a second, rise times of the positive part of the first pressure cycle in the range of nano-seconds (ns) up to some milli-seconds (ms), the acoustic shock waves being very fast pressure pulses having amplitudes above 0.1 MPa and rise times of the amplitude being below 100's of ns, the duration of the shock wave is typically below 1-3 micro-seconds ( $\mu$ s) for the positive part of a cycle and typically above some micro-seconds for the negative part of a cycle; and					
subjecting t the absence of a f evidenced by not wherein the cellu localized geomet have no geometri substance thereby the cellular subst pressure pulse sh generation having 27. The method of	subjecting the cellular substance to convergent, divergent, planar or near planar acoustic shock waves or pressure pulses in the absence of a focal point impinging the substance stimulating a cellular response in the absence of creating cavitation bubbles evidenced by not experiencing the sensation of cellular hemorrhaging caused by the emitted waves or pulses in the substance wherein the cellular substance is positioned within a path of the emitted shock waves or pressure pulses and away from any localized geometric focal volume or point of the emitted shock waves wherein the emitted shock waves or pressure pulses either have no geometric focal volume or point or have a focal volume or point ahead of the cellular substance or beyond the cellular substance thereby passing the emitted waves through the cellular substance while avoiding having any localized focal point within the cellular substance wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic wave generation having an energy density value ranging as low as 0.00001 mJ/mm <sup>2</sup> to a high end of below 1.0 mJ/mm <sup>2</sup> . 27. The method of claim 26, wherein the shock waves stimulate the senescent cells enhancing replication.				
DN0405	18102243	01/27/2023	ACOUSTIC SHOCK WAVE OR PRESSURE PULSE TREATMENT FOR PROPTOSIS OR EXOPHTHALMOS John F. Warlick		
Status: 03/08/2023 ready for examination					
The device of the present invention allows for a method of treating a patient exhibiting proptosis of eye tissue by treating inflamed tissue behind the eye or treating the thyroid directly or treating a reflexology zone to reduce pressure and inflammation of the eye tissue using pressure pulses or shock waves. The treatment method for bulging eyes has the steps of placing an applicator head of an acoustic shock wave or pressure pulse generator or source on or near an eye or eyelid region, temple, thyroid or reflexology zone; coupling the applicator head directly or indirectly to an exposed surface of the region being treated; and activating the generator or source to emit pressure pulses or acoustic shock waves to the eye or eyelid region, temple, thyroid or reflexology zone to treat the eye tissue exhibiting high pressure and inflammation to reduce the pressure and inflammation.					
1. A method of	f treating a patient exhibiti	ng proptosis of eye tissue	to reduce pressure and inflammation using pressure pulses or		

				atent i mingo	
D Ni	ocket umber	USPTO Serial Number	Filing Date (day/month/year)	Title	
sho	ck waves co	omprises the steps of:			-
of tl	placin he patient;	ng an applicator head of an	acoustic shock wave or j	pressure pulse generator or source near an eyelid or eye region	
	coupli	ing the applicator head dire	ectly or indirectly to an e	xposed surface of the skin near the eyelid or eye region; and	
pres	activa ssure and in	ting the generator or source flammation to reduce the h	e to emit pressure pulses high pressure and inflami	or acoustic shock waves to the eye tissue exhibiting high mation.	
2. T thro	The method ough the eye	l of claim 1, wherein the en elid skin to the eye tissue.	nitted pressure pulses or	acoustic shock waves are transmitted in a pattern passing	
3. ]	The method	l of claim 1, wherein the en	nitted pressure pulses or	acoustic shock waves pattern impinges the eye tissue.	
4. T nega	The method ative pressu	of claim 1, wherein the pre- are.	essure pulse being an acc	oustic pulse which includes several cycles of positive and	
5. T MP	The method a and the ti	l of claim 4, wherein the pr me duration of the pressure	essure pulse has an ample e pulse is from below a n	litude of the positive part of such a cycle should be above 0.1 nicrosecond to about a second.	
6. T up t	The method o some mil	l of claim 5, wherein the ris liseconds (ms).	se times of the positive p	art of the first pressure cycle in the range of nanoseconds (ns)	
7. T and	The method rise times o	l of claim 6 wherein the acc of the amplitude being belo	oustic shock waves being ow 1000 ns.	g very fast pressure pulses having amplitudes above 0.1 MPa	
8. T a cy	The method vele and typ	of claim 3, wherein the during above some microse	ration of the shock wave conds for the negative p	is typically below 1-3 microseconds ( $\mu$ s) for the positive part of art of a cycle.	
9. T or p cavi whe geoi geoi wav	The method ressure pul itation bubb rein the cel metric foca metric foca ves or pulse	l of claim 3, wherein subject ses in the absence of a foca- bles evidenced by not exper- lls are positioned within a p l volume or point of the en l volume or point or have a s through the cells while av	cting the eye tissue to con- al point impinging the ce- riencing the sensation of path of the emitted shock nitted shock waves where a focal volume or point a voiding having any local	nvergent, divergent, planar or near planar acoustic shock waves lls stimulating a cellular response in the absence of creating themorrhaging caused by the emitted waves or pulses in cells a waves or pressure pulses; and away from any localized ein the emitted shock waves or pressure pulses either have no head of the cells or beyond the cells thereby passing the emitted ized focal point within the cells.	
10. and wav	The metho the pressurve generation	od of claim 1, wherein the e re pulse shock wave genera on having an energy density	emitted pressure pulses o tor or source is based on v value ranging as low as	r shock waves are convergent, divergent, planar or near planar electro-hydraulic, electromagnetic, piezoceramic or ballistic s 0.00001 mJ/mm <sup>2</sup> to a high end of below 1.0 mJ/mm <sup>2</sup> .	
11. of le with cells	The metho ess than 1.0 nin a path o s or eye tiss	od of claim 10, wherein sub mJ/mm <sup>2</sup> per shock wave s of the emitted pressure pulse sue being treated is position	jecting the eye tissue dir stimulates said cells or ey es or acoustic shock wav ned away from any focal	ectly to the acoustic shock waves having a low energy density ye tissue wherein the cells or eye tissue is positioned directly res in the absence of any focal point or if a focal point exists, the point.	
					-

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12. The metho	d of claim 11, wherein the	energy density is selected	ed to avoid any cell damage to the cells or eye tissue.		
13. The method wherein the adu thyroid disease the treatment.	13. The method of claim 1, wherein treating the eye tissue to stimulate by accelerating or increasing cell growth or regeneration wherein the administering is applied to the patient who has a pathological condition of the eyes exhibiting damage caused by thyroid disease, injury or inflammation, any one of which has caused an increased pressure and inflammation which is reduced by the treatment.				
14. The method of treating the eye tissue of claim 1 stimulates by accelerating and increasing cell tissue growth or regeneration or repair in addition to reducing eye tissue swelling and pressure and inflammation and wherein the cell or eye tissue is from a mammal which is a human or an animal.					
15. A method pressure pulses	of treating a patient exhibit or shock waves comprises	ing proptosis of eye tiss the steps of:	ue to reduce pressure and inflammation causing proptosis using		
placin	g an applicator head of an	acoustic shock wave or j	pressure pulse generator or source near the temple of the patient;		
coupli	ing the applicator head dire	ctly or indirectly to an e	xposed surface of the skin near the temple; and		
activating the generator or source to emit pressure pulses or acoustic shock waves to the eye tissue exhibiting high pressure and inflammation to reduce the high pressure and inflammation.					
16. A method pressure pulses	of treating a patient exhibit or shock waves comprises	ing proptosis of eye tiss the steps of:	ue to reduce pressure and inflammation causing proptosis using		
placin	g an applicator head of an	acoustic shock wave or j	pressure pulse generator or source near the thyroid of the patient:	1	
coupli	ing the applicator head dire	ctly or indirectly to an e	xposed surface of the skin near the eyelid or eye region; and		
activa pressure and in	ting the generator or source flammation to reduce the h	e to emit pressure pulses igh pressure and inflam	or acoustic shock waves to the eye tissue exhibiting high mation.		
17. A method causing proptos	of treating a patient exhibit sis using pressure pulses or	ing proptosis of eye tiss shock waves comprises	ue using a reflexology zone to reduce pressure and inflammation the steps of:		
placin reflexology zor	g an applicator head of an ne of the patient;	acoustic shock wave or j	pressure pulse generator or source near an eye or thyroid		
coupli zone; and	ing the applicator head dire	ctly or indirectly to an e	xposed surface of the skin near the eye or thyroid reflexology		
activa to treat the eye	ting the generator or source tissue exhibiting high pres	e to emit pressure pulses sure and inflammation to	or acoustic shock waves to the eye or thyroid reflexology zone o reduce the high pressure and inflammation.		

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DN0406	18110073	02/15/2023	ACOUSTIC SHOCK WAVE OR PRESSURE PULSE TREATMENT FOR GUM SENSITIVITY John F. Warlick
Status: 03/22/202	3 ready for examination		
The device of the present invention allows for a method of treating a patient exhibiting sensitivity of gum tissue by treating gum tissue or treating a reflexology zone to reduce pain and inflammation of the gum tissue using pressure pulses or shock waves. The treatment method for gum sensitivity has the steps of placing an applicator head of an acoustic shock wave or pressure pulse generator or source on or near gum tissue or reflexology zone; coupling the applicator head directly or indirectly to an exposed surface of the region being treated; and activating the generator or source to emit pressure pulses or acoustic shock waves to the gum tissue or reflexology zone to treat the gum tissue exhibiting pain and inflammation to reduce the pain and inflammation. 1. A method of treatment for a sensitive gum tissue exhibiting a sensitivity to touch, heat or cold conditions in a diagnosed patient comprises the steps of:			
act	ivating an acoustic shock	wave generator or sourc	e to emit acoustic shock waves; and
subjecting the sensitive gum tissue of the patient to the acoustic shock waves stimulating said gum tissue, wherein the gum tissue is positioned within a path of the emitted shock waves.			
2. The method of	treatment of claim 1, whe	rein the emitted shock w	vaves are convergent, divergent, planar or near planar.
3. The method of volumes of points tissue at a distance	treatment of claim 1, whe s at a distance of at least X se at or less than the distan	rein the emitted shock w from the generator or so ce X from the source.	vaves are convergent having one or more geometric focal ource, the method further comprising positioning the gum
4. The method of	treatment of claim 1 furth	er comprises the step of	2
administerin	g one or more medicamen	ts prior, during or after	subjecting the patient to acoustic shock waves.
5. The method of	treatment of claim 1 furth	er comprises the step of	2
testing the sensitivity of the treated gum tissue of the diagnosed patient before and after exposure to one or more acoustic shock wave treatments.			
6. The method of treatment of claim 1 further comprises the step of:			
numbing and desensitizing the gum tissue.			
7. The method of indication of one	treatment of claim 1, whe or more pathological cond	rein the treated gum tiss litions including:	ue has no indication of periodontal disease including any

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a periodontal periodontitis, pro	biofilm mass, periapical e biofilm mass, of ligament,	ndodontic lesions, endo- cementum or alveolar b	p-perio lesions, gingivitis, inflammation of gingival tissue, some support to teeth.		
8. The method of factors in the ora	f claim 6, wherein the treat al structure effecting a tissa	ted gum tissue activates le repair or tissue regene	or otherwise stimulates stem cells or release of cellular gro eration.	owth	
9. A method of shock waves con	treating a patient exhibiting nprises the steps of:	g sensitivity of gum tissı	ue to reduce pain and inflammation using pressure pulses of	or	
placing patient;	an applicator head of an a	coustic shock wave or pr	ressure pulse generator or source near the gum tissue of the	e	
couplin	g the applicator head direc	tly or indirectly to an ex	posed surface of the skin near the gum tissue; and		
activation inflammation to	ng the generator or source reduce the pain and inflam	to emit pressure pulses of imation.	or acoustic shock waves to the gum tissue exhibiting pain a	and	
10. The method through the gum	of claim 9, wherein the en tissue.	nitted pressure pulses or	acoustic shock waves are transmitted in a pattern passing		
11. The method	of claim 9, wherein the en	nitted pressure pulses or	acoustic shock waves pattern impinges the gum tissue.		
12. The method onegative pressure	of claim 9, wherein the pre e.	ssure pulse being an acc	oustic pulse which includes several cycles of positive and		
13. The method MPa and the tim	of claim 12, wherein the p e duration of the pressure	pressure pulse has an amp pulse is from below a mi	plitude of the positive part of such a cycle should be above icrosecond to about a second.	e 0.1	
14. The method (ns) up to some r	of claim 13, wherein the r milliseconds (ms).	ise times of the positive	part of the first pressure cycle is in the range of nanosecon	ıds	
15. The method and rise times of	of claim 14, wherein the a the amplitude being below	coustic shock waves bei v 1000 ns.	ing very fast pressure pulses having amplitudes above 0.1 I	MPa	
16. The method of a cycle and ty	16. The method of claim 11, wherein the duration of the shock wave is typically below 1-3 microseconds ( $\mu$ s) for the positive part of a cycle and typically above some microseconds for the negative part of a cycle.				
17. The method waves or pressur creating cavitation cells wherein the geometric focal waves or pulses	of claim 11, wherein subject of claim 11, wherein subject of a pulses in the absence of a pubbles evidenced by new cells are positioned within volume or point of the emit volume or point or have a through the cells while average of the c	ecting the gum tissue to o a focal point impinging to ot experiencing the sensa n a path of the emitted sl tted shock waves wherei focal volume or point ah piding having any localiz	convergent, divergent, planar or near planar acoustic shock the cells stimulating a cellular response in the absence of ation of hemorrhaging caused by the emitted waves or puls hock waves or pressure pulses; and away from any localized in the emitted shock waves or pressure pulses either have r head of the cells or beyond the cells thereby passing the emized focal point within the cells.	k ses in ed no nitted	
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18. The method of claim 1, wherein the emitted pressure pulses or shock waves are convergent, divergent, planar or near planar and the pressure pulse shock wave generator or source is based on electro-hydraulic, electromagnetic, piezoceramic or ballistic

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wave generation	having an energy density v	value ranging as low as (	$0.00001 \text{ mJ/mm}^2$ to a high end of below $1.0 \text{ mJ/mm}^2$ .	
19. The method of less than 1.0 r within a path of cells or gum tiss	of claim 18, wherein subje nJ/mm <sup>2</sup> per shock wave sti the emitted pressure pulses ue being treated is position	ecting the gum tissue dire mulates said cells or gun or acoustic shock waves ed away from any focal	ectly to the acoustic shock waves having a low energy density in tissue wherein the cells or gum tissue is positioned directly is in the absence of any focal point or if a focal point exists, the point.	
20. The method	of claim 19, wherein the e	nergy density is selected	to avoid any cell damage to the cells or gum tissue.	
21. The method wherein the adm gum disease, inju	of claim 9, wherein treating inistering is applied to the ury or inflammation, any or	g the gum tissue to stimu patient who has a pathol ne of which has caused p	late by accelerating or increasing cell growth or regeneration ogical condition of the gums exhibiting damage caused by pain and inflammation which is reduced by the treatment.	
22. The method or repair in addit and wherein the	of treating the gum tissue tion to reducing gum tissue cell or gum tissue is from a	of claim 9 stimulates by swelling and pressure and mammal which is a hur	accelerating and increasing cell tissue growth or regeneration and inflammation in the absence of any pathological condition man or an animal.	
23. A method of shock waves con	f treating a patient exhibitin nprises the steps of:	ng sensitivity of gum tiss	ue to reduce pain and inflammation using pressure pulses or	
placing	an applicator head of an ac	coustic shock wave or pr	essure pulse generator or source near the cheek of the patient;	
couplin	g the applicator head direct	tly or indirectly to an exp	posed surface of the skin near the cheek; and	
activati inflammation to	ng the generator or source reduce the pain and inflam	to emit pressure pulses o mation.	r acoustic shock waves to the gum tissue exhibiting pain and	
24. A method of inflammation car	f treating a patient exhibitir using proptosis using press	ng sensitivity of gum tiss ure pulses or shock wave	ue using a reflexology zone to reduce pressure and es comprises the steps of:	
placing reflexology zone	an applicator head of an ac of the patient;	coustic shock wave or pr	essure pulse generator or source near a gum or mouth	
couplin zone; and	g the applicator head direct	tly or indirectly to an exp	posed surface of the skin near the gum or mouth reflexology	
activating the generator or source to emit pressure pulses or acoustic shock waves to the gum or mouth reflexology zone to treat the gum tissue exhibiting pain and inflammation to reduce the pain and inflammation.				

TRT USPTO Patent Filings			
Docket Number	USPTO Serial Number	Filing Date (day/month/year)	Title
Axel Voss D31458US	11/654,805	01/18/2007	Device for Generating Shock Waves
Publication Date: 10/11/2007		Publication No. <u>US 2007/0239084 A1</u> Patent No. US <u>7,695,443</u>	
Patent Issue Date: 04/13/2010		Maint Fee: all paid	

Assignment to Tissue Regeneration Technologies, Inc.

The invention relates to a device for generating shock waves for medical therapy comprising two electrodes of a spark discharge section, wherein the device is filled with a liquid medium, and wherein the liquid medium comprises a colloidal suspension of a conducting, semiconducting, or polarizable substance in water.

1. A therapy head for treatment with shock waves into which is inserted device (V) for generating acoustic shock waves for medical therapy when an applied voltage of 10 KV to about 30 KV is applied to generate a spark discharge the therapy head comprising

a housing having a reflector (R) which is formed having a cavity that has an open side in the distal direction;

a closure cap (D) made from a material for coupling the shock waves into the body part to be treated, the closure cap (D) closes the open side of the reflector sealing the cavity; and wherein

the device (V) is inserted into a recess on a proximal side of the housing, the device (V) having two electrodes of a spark discharge section extending into the cavity, which generates a spark discharge under exposure to 10 KV to 30 KV at on or near a focus of the reflector wherein the cavity is filled with a liquid medium, and wherein the liquid medium comprises a colloidal particle suspension of a conducting, semiconducting, or polarizable substance of aluminum particles in water which reduces the latency time of the shock wave generation wherein the aluminum particles are of a size of 1 nanometer to 1 micron to prevent falling of the particles in a gravitational field thereby maintaining a portion of the colloidal particle suspension between the two electrodes.

2. The device according to claim 1, wherein the diameter of the particles of the conducting, semiconducting, or polarizable substance of particles is smaller than 1 micron.

Axel Voss	11/699,863	01/30/2007	Device For The Generation Of Shock Waves
D31464US			Ounzing A Invrisior

# TRT USPTO Patent Filings Docket Number USPTO Serial Number Filing Date (day/month/year) Title Publication Date: 10/04/2007 Publication No. US 2007/0232964 A1 Patent No. 7,775,995 Granted: 08/17/2010 Maint Fee: 11.5 yr due 02/18/2022

Assignment to Tissue Regeneration Technologies, Inc.

The invention relates to a device for the generation of shock waves for medical therapy, having a shock source, an energy storage and a switch, wherein the energy storage is a capacitor with a high capacity.

1. A device for the generation of shock waves for the medical therapy, having an electro-hydraulic shock source, an energy storage and a switch, wherein the energy storage is a capacitor with a capacitance of between 500 nF and larger than 100 nF and the switch is a semiconductor MOSFET thyristor switch, and the electro-hydraulic shock source is a spark discharge section and the spark discharge section having two essentially pointed electrodes whose tips are arranged at a distance of 0.1 mm to 1 mm from one another, which discharges when the capacitor is charged to a voltage of between 500 V to 5000 V.