Xandros (24.22.12.42)
Regrowth.com Member

Registered: May 2009
Posts: 13
[Ignore]

LLLT - No opinion, nor speculation, only facts please!

Can anyone offer a factual debate as to the effectiveness of LLLT after viewing this compelling link below?

I understand there are numerous members that use LLLT (I being one) although I have grown skeptical throughout the years and view only double-blind, independent studies as note worthy of my time and monetary investment. LLLT is my last and final commitment to the process.

If nothing else for the devote LLLT users, this link will increase your circulation and hopefully (sincerely) to your scalp.

http://www.baldtruthtalk.com/showthread.php?t=183

Moderator Commands:

6/26/2009 9:20 PM

hs01 (24.239.187.93)
Regrowth.com Member

Registered: Apr 2009
Posts: 18
[Ignore]

Xandros,

If it works for tissue repair and pain relief, then it can certainly penetrate the skin's optical barrier.

http://www.liebertonline.com/doi/abs/10.1089/pho.2004.22.323

The link is to a metanalysis of studies of same.

Also please note that they were talking about the hairmax laser comb. Or as I now think of it, the very expensive pop gun of laser therapies.

Moderator Commands:

6/26/2009 9:47 PM

NEW THREAD | POST REPLY

OverMachoGrande (74.178.220.209)
Regrowth.com Member

Registered: Oct 2006
Posts: 6,636
[Ignore]

Whether you intended it or not, this is sort of a rude thread. All we have EVER BEEN ABOUT on this site are the facts. There is no "opinion" or "speculation" about the MONTHS AND MONTHS of research we all did on this, and every bit of it has been laid out for the public to read (or MISS, like most have).

"Compelling link"? This was debated *extensively* at HLH with that "doctor", and we won on every single point, without a doubt. We exposed him as a sham and presented overwhelming evidence for our proof. Then, the thread was DELETED under extremely suspicious circumstances. A "Hey, the thread was deleted but I'm going to try to recover it" type of thing was posted by Farrel, and I posted a PDF of the the first page of the discussion -AND IT WAS DELETED AGAIN.

I wrote about it on my blog here: "What a FANTASTIC WEEK for the "common person" like you and me!" ...but the fact remains that most other places aren't going to give LLLT it's fair shake -and most people, including that doctor, didn't even know that there was a difference between a laser CLINIC and a laser COMB.

This has been talked about a lot here, too. Actually, this has been talked about here so much that I doubt much people are going to respond to your thread. It's not "compelling" in the least, and all we are about is a "factual debate" anyway. All of us here on this board simply want to regrow our hair, and not do what the assclowns do at other site -which is ignore evidence on some sort of "blind faith" or "religion" that lasers don't work.

For christs sake... the LASERCOMB has been even shown to grown hair in FDA approved studies.

Anyway, if you don't think a positive testimonial thread with something like 60-70 veteran posters on it is compelling, then you might be at the wrong site. That is FAR MORE compelling than anything else out there. Propecia, minox, and the laser comb all have double blind studies behind them, yet they don't do jack shit for most people. We looked into it, found out why laser combs don't work, why laser clinics do, did the calculations and found that the numbers tell us that is exactly what should be happening, and made devices that do what science says they should... which is stop our hair loss.

I don't know what to tell you, except for you need to look into this a lot more because we've certainly covered this ad nauseum. It deals with all the lowest elements of the hair loss world combined -doctors that are shams, companies that don't give a damn and are out to rip you off, and forum people that are blithering ignoramouses- so it disgusts me to really even talk about it anymore!

Man, I'm so tired of the "captain yesterday" hair loss sites. It's so frustrating that people can do things like say "lasers are ineffective" when they don't know what the hell they are talking about, they are talking about a LASERCOMB -not a real laser device, and they have NEVER USED ONE THEMSELVES.

If you want double blind studies... then go use propecia and rogaine and tell us how that works for you. I already know the answer. If you want to stop your hair loss, thicken your hair, and possibly regrow up to a couple of years, then use a laser helmet and don't play any of the stupid "you need to prove this to me" games that are out there. Fuck that, go prove it to yourself! The "facts" from all of these studies about propecia and minox have don't add up or equate to real life anyway, so why would anyone care about what these "studies" tell us compared to what real hair loss veterans say?! That always baffles me.

-O.M.G.

Last Edited On Jun-26-2009 at 10:15 PM.

Moderator Commands:

6/26/2009 10:04 PM

MikeysEgo (205.188.116.18)
Regrowth.com Member

Registered: Feb 2008
Posts: 84
[Ignore]

He isn't being unreasonable. If you have them, post them, if not then don't contribute. FYI I am also a laser user and supporter, but I feel members are entitled to make request on a blog otherwise don't comment if you can't contribute. Fair is fair

Moderator Commands:

6/26/2009 10:37 PM

hapyman (24.27.104.252)
Regrowth.com Member

Registered: May 2008
Posts: 1,526
[Ignore]

Dr. xxx is way off base and like OMG has said we proved every point of his to be wrong. There is a mammoth thread over at another board that pretty much shows this, however I think it was deleted because Dr. xxxx pays to be a part of the board. Fishy right?

Dr. xxx has no "expertise" in lasers and pretty much thinks that all lasers are created equal, which anyone on this board can tell you is completely false. There are various wavelengths and power outputs, and each one will penetrate certain tissues better than others and at different depths.

We can start off with the simple statement that he "claims" that laser light cannot penetrate the skin. This is completely baseless as there are plenty of "peer reviewed" articles which show otherwise. Also how does he explain the use of lasers in plastic & general surgery. Laser hair removal is a very "real" surgery and works very similar to what we are doing but at a much greater energy output. The lasers have to penetrate the skin with a depth of at least 1-2mm to reach the hair follicle. Laser hair removal would never be realistic if this wasn't possible.

==========

http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0102-86502006000400013

"The results of this study showed that the difference between the experimental group (Group 2) and the control group (Group 1) were statistically significant. Group 2 was efficient for increasing the random skin flap viability in rats, maybe due to the enhancement of vascular perfusion. Moreover, low-level thermal effects cannot be excluded as a potential mechanism to increase vascular perfusion, since Stadler et al.19 showed a thermal increase in rats, and thermal effects of irradiation are unlikely to explain the LLLT effect, ***but because they used infrared 830 nm laser, the skin color should be considered, particularly at higher flows.***"

==========

http://www.spectramedics.com/index.php?id=105

"The optics of human skin has been the subject of study since Nichols' seminal work in 1893 (1). Through more recent work, by the likes of Anderson and Parrish (2), Gemert and Jacques (3), and many others, it is now known that the optical window of human tissue falls within a range from approximately 600nm to approximately 1300nm - which is also clearly shown by the absorption curves to which you refer.

The most simplistic conclusion which can be drawn from this is that, because the optical widow is actually centered around 950nm, this wavelength and those nearest to it must be the deepest penetrating of all. However, this is no more the case than the previous claim.

For example, Anderson and Parrish (2) found the maximum approximate depth of penetration of optical radiation in fair Caucasian skin to be at 1200nm. Zhao and Fairchild (4) measured the transmittance of laser energy through Asian, African American and Caucasian tissue. They tested 532, 633, 675, 807, 911 and 1064nm, and found 1064 to be the deepest penetrating, although the actual transmittance was influenced by both race (more accurately, skin color) and beam diameter.

The actual penetration depth of light in tissue is influenced by numerous factors, one of which is wavelength. However it is simply not the case that there is one 'deepest penetrating' wavelength.

The literature suggests that wavelength alone is perhaps less of a determining factor for the actual or effective depths of penetration than are the type of emitter and its operating mode, the physical design of the applicator, and the technique with which the applicator it is used. Then there is the tissue itself (muscle, adipose, bone), its location on the body, the skin color (as we've seen), and so on.

And, as with many other aspects of laser and light therapies, penetration depth, its accurate definition, its measurement, and even its importance in laser therapy, are hotly debated topics that will, no doubt, remain so for some time to come."

Last Edited On Jul-22-2009 at 12:36 AM.

Moderator Commands:

6/26/2009 10:55 PM

hapyman (76.189.202.250)
Regrowth.com Member

Registered: May 2008
Posts: 1,526
[Ignore]

Effects of Visible Light on the Skin†

Bassel H. Mahmoud, Camile L. Hexsel, Iltefat H. Hamzavi and Henry W. Lim*

Multicultural Dermatology Center, Department of Dermatology, Henry Ford

Hospital, Detroit, MI

†This paper is part of a special issue dedicated to Professor Hasan Mukhtar on the occasion of his 60th birthday.

Electromagnetic radiation has vast and diverse effects on human skin. Although photobiologic studies of sunlight date back to Sir Isaac Newton in 1671, most available studies focus on the UV radiation part of the spectrum. The effects of visible light and infrared radiation have not been, until recently, clearly elucidated. The goal of this review is to highlight the effects of visible light on the skin. As a result of advances in the understanding of skin optics, and comprehensive studies regarding the absorption spectrum of endogenous and exogenous skin chromophores, various biologic effects have been shown to be exerted by visible light radiation including erythema, pigmentation, thermal damage and free radical production. It has also been shown that visible light can induce indirect DNA damage through the generation of reactive oxygen species. Furthermore, a number of photodermatoses have an action spectrum in the visible light range, even though most of the currently available sunscreens offer, if any, weak protection against visible light. Conversely, because of its cutaneous biologic effects, visible light is used for the treatment of a variety of skin diseases and esthetic conditions in the form of lasers, intense pulsed light and photodynamic therapy.

Moderator Commands:

6/26/2009 10:58 PM

OverMachoGrande (74.178.220.209)
Regrowth.com Member

Registered: Oct 2006
Posts: 6,636
[Ignore]

Wow... I just went and reread some of that discussion on that thread again, and it's so disgusting! Right off the bat, that doctor was talking about how DEVESTATING HIS VIDEO WAS TO THE LLLT INDUSTRY! lol... Oh my god, I forgot how full of shit he was!

He had no knowledge of the well known studies, he showed that he didn't even have any idea that there were differences in between laser combs and clinical laser devices, and every point he made in the video was flawed -and proved so. Whenever we showed pictures, he would dismiss them no matter what. MOST IMPORTANTLY, in the discussion at HLH, he changed his stance from "Lasers CAN'T work" to "lasers may work somewhat, but they aren't cosmetically significant like a hair transplant". That right there shows that he's a fraud.

Every laser veteran is actually well served to go back and read that again. It helps you remember what we had to deal with. If you want to know EVERYTHING that is wrong with the hair loss industry and forums, just go read that again.

...And let's stop the trend of saying "I'm also a laser user" when giving me a back handed insult, like that is adding some sort of credibility to your insult. It happens on other boards, and let's not let it start here, too. It really means nothing to me that someone is a laser user when they are implying that I'm not contributing -which I cleary am.

Last Edited On Jun-26-2009 at 11:03 PM.

Moderator Commands:

6/26/2009 10:59 PM

hapyman (76.189.202.250)
Regrowth.com Member

Registered: May 2008
Posts: 1,526
[Ignore]

This one is for use on muscles. Well I guess this is BS because lasers can't penetrate the skin let alone all the way to a muscle. Note the last sentence of the abstract.

Effect of 830 nm low-level laser therapy in exercise-induced skeletal muscle fatigue in humans

Ernesto Cesar Pinto Leal Junior1, 2, 3 Contact Information, Rodrigo Álvaro Brandão Lopes-Martins4, Adriane Aver Vanin5, Bruno Manfredini Baroni1, 5, Douglas Grosselli1, 6, Thiago De Marchi1, 5, Vegard V. Iversen7 and Jan Magnus Bjordal3, 8

(1) Laboratory of Human Movement (LMH), University of Caxias do Sul (UCS), Rua Francisco Getúlio Vargas, 1130, Caxias do Sul, 95070-560, Rio Grande do Sul, Brazil

(2) Sports Medicine Institute (IME), University of Caxias do Sul (UCS), Caxias do Sul, RS, Brazil

(3) Section for Physiotherapy Science, Institute of Public Health and Primary Health Care, University of Bergen, Bergen, Norway

(4) Laboratory of Pharmacology and Phototherapy of Inflammation, Department of Pharmacology, Institute of Biomedical Sciences, University of São Paulo (USP), São Paulo, SP, Brazil

(5) Faculty of Physiotherapy, University of Caxias do Sul (UCS), Caxias do Sul, RS, Brazil

(6) Faculty of Physical Education, University of Caxias do Sul (UCS), Caxias do Sul, RS, Brazil

(7) Section for Physiology, Institute of Biomedicine, University of Bergen, Bergen, Norway

(8) Bergen University College, Institute for Physical Therapy, Bergen, Norway

Received: 11 February 2008 Accepted: 11 June 2008 Published online: 23 July 2008

Abstract This study aimed to investigate the effect of 830 nm low-level laser therapy (LLLT) on skeletal muscle fatigue. Ten healthy male professional volleyball players entered a crossover randomized double-blinded placebo-controlled trial. Active LLLT (830 nm wavelength, 100 mW output, spot size 0.0028 cm2, 200 s total irradiation time) or an identical placebo LLLT was delivered to four points on the biceps humeri muscle immediately before exercises. All subjects performed voluntary biceps humeri contractions with a load of 75%

of the maximum voluntary contraction (MVC) force until exhaustion. After active LLLT the mean number of repetitions was significantly higher than after placebo irradiation [mean difference 4.5, standard deviation (SD) ±?6.0, P? =?0.042], the blood lactate levels increased after exercises, but there was no significant difference between the treatments. We concluded that 830 nm LLLT can delay the onset of skeletal muscle fatigue in high-intensity exercises, in spite of increased blood lactate levels.

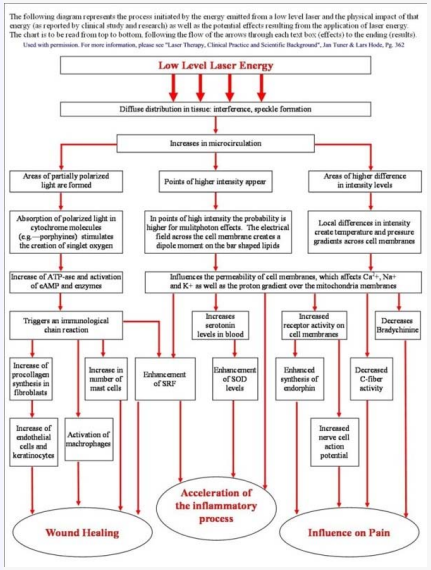
Moderator Commands:

6/26/2009 11:00 PM

OverMachoGrande (74.178.220.209)
Regrowth.com Member

Registered: Oct 2006
Posts: 6,636
[Ignore]

Don't forget about this:



I suppose all of that was just MADE UP, though, since lasers can't even penetrate the skin.

Moderator Commands:

6/26/2009 11:02 PM

hapyman (76.189.202.250)
Regrowth.com Member

Registered: May 2008
Posts: 1,526
[Ignore]

Yeah he is way under the curve and holding drastically on to his career. I think he feels threatened for whatever reason.

Moderator Commands:

6/26/2009 11:03 PM

jksl (65.92.121.191)
Regrowth.com Member

Registered: Oct 2008
Posts: 293
[Ignore]

I feel sorry for all these people here:

http://www.hairmaxforum.com/forum/index.php

Moderator Commands:

6/26/2009 11:04 PM

hapyman (76.189.202.250)
Regrowth.com Member

Registered: May 2008
Posts: 1,526
[Ignore]

The mother diagram as we should call it

Moderator Commands:

6/26/2009 11:04 PM

OverMachoGrande (74.178.220.209)
Regrowth.com Member

Registered: Oct 2006
Posts: 6,636
[Ignore]

...and don't forget HARVARD MEDICAL SCHOOL:

Mechanisms of Laser Induced Hair Regrowth

"A Japanese group reported on the use of Super Lizer (a linear polarized light source providing 1.8 W of 600 to 1600nm light) to treat alopecia areata. Three minute sessions every one or two weeks produced significant hair growth compared to non-treated lesions in 47% of patients."

"IncreasedRNA and protein synthesis was demonstrated after 5J/cm2. Pastore et al found increased activity ofcytochrome c oxidase and an increase in polarograph-ically measured oxygen uptake after 2 J/cm2of HeNe.A major stimulation in the proton pumping activity,about 55% increase of H+/e- ratio was found in illu-minated mitochondria. Yu et al used a 660 nm laser ata power density of 10 mW/cm2and showed increasedoxygen consumption (0.6 J/cm2and 1.2 J/cm2),increased phosphate potential, and energy charge (1.8J/cm2and 2.4 J/cm2) and enhanced activities ofNADH: ubiquinone oxidoreductase, ubiquinol: ferricy-tochrome C oxidoreductase and ferrocytochrome C oxygen oxidoreductase (0.6 J/cm2, 1.2 J/cm2, 2.4 J/cm2and 4.8 J/cm2)."

"Another report found a greater effect of LLLT in stimulating wound healing in malnourished compared to normally fed rats."

...but lasers don't have an effect on human tissue.

Moderator Commands:

6/26/2009 11:07 PM

OverMachoGrande (74.178.220.209)
Regrowth.com Member

Registered: Oct 2006
Posts: 6,636
[Ignore]

It's so funny that people accuse US of having some sort of motives when the evidence IS ALL AROUND THEM that this works. Every single study done on this shows that it grows hair -even with the crappy hairmax- yet some people just refuse to believe it.

You have two moderators at HLT that snicker at and shoot down lasers whenever they can, you have HLH where that thread that was devistating to that doctor's credibility was deleted, and you have all sorts of forum people that THINK they are smart but it hasn't dawned on them that minox and propecia FAIL more times than not, yet are still touted as the one true solution for hair loss.

It's AMAZING how stupid people are about this. At least since the advent of the "positive testimonials" thread, that doctor has disappeared for months, and the accusations of ME being behind all of the posts through some deceptive means have completely stopped. So, at least that's nice.

Moderator Commands:

6/26/2009 11:13 PM

OverMachoGrande (74.178.220.209)
Regrowth.com Member

Registered: Oct 2006
Posts: 6,636
[Ignore]

"Long-term (1-year) experience with LDS 100 in the treatment of men and women with androgenetic alopecia"

"Principal exclusion criteria included significant abnormalities on screening physical examination or laboratory evaluation, surgical correction of scalp hair loss, topical Minoxidil use within one-year, use of drugs with androgenetic or antiandrogenetic properties, use of finasteride or other 5aR inhibitors, or alopecia due to other causes. Men and women were instructed not to alter their hairstyle or dye their hair during the studies." NO PROPECIA, MINOX, OR ANYTHING ELSE OTHER THAN LASERS...

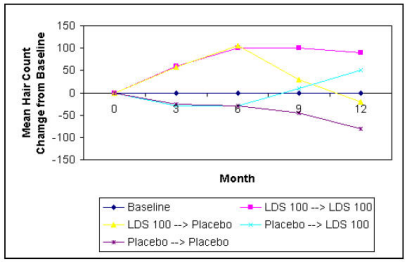


Figure 3. *Hair count mean change from baseline (+- 1 SE). Hair count mean change at month 6 is shown for the initial study population (N for analysis: LDS 100 = 152, placebo = 151) as well as for the subjects who continued in the extension studies (N for analysis for patients in the 6-months extension: LDS 100 → LDS 100 = 96, LDS 100 → Placebo = 10, Placebo → LDS 100 = 95, Placebo → Placebo = 11).*

...but I'm sure it was just "SEASONAL CHANGES IN HAIR DENSITY"! LMAO... that's what he would say all the time!

This is the study he accused me of MAKING UP! In a "serious forum debate", this assclown doctor said that *I* invented the most well know study of LLLT. That shows me that not only he just talks out of his ass without doing research (he showed that with the video anyway), but he -someone that supposedly knows all about how LLLT is ineffective- wasn't even familiar with the basic information about it.

Like I said, we ASKED HIM, and he showed that he had no knowledge of the differentiation between a laser comb and a real laser device -yet he says all of this, and other forums believe him. The guy doesn't even know what a "joule" is, or the "window of energy", yet he makes a video talking about how lasers can't penetrate the skin -and 1400 studies show the opposite of that (all at laser.nu)- and yet this "debate" is still "compelling" to some.

That's bullshit, I'm getting frustrated as hell that people still don't see this after we've been talking about this for a year and a half.

GUYS... FOLLOW THE MONEY IN THOSE OTHER FORUMS. You'll look at George Bush and somehow come up with that he brought down the twin towers, but you can't see a real, plain as day conspiracy when it's right in front of your face! The world is amazing...

-O.M.G.

Last Edited On Jun-26-2009 at 11:29 PM.

Moderator Commands:

6/26/2009 11:22 PM

chore boy (65.184.26.4)
Regrowth.com Member

Registered: Jun 2007
Posts: 3,311
[Ignore]

Forgive me my Lord as the last thing I wish to be is redundant, but doesn't the second box/first bio reaction indicator on your chart say that the light diffuses into the tissue? Would it be outrageous for me to think that maybe the cascade of events following the introduction of LLLT "into" the skin (resulting in pain management or hair growth) would be a result of energy transfer/metabolism/what-have-you as opposed to sheer penetration of a follicle or muscle?

Fa sho

Last Edited On Jun-26-2009 at 11:30 PM.

Moderator Commands:

6/26/2009 11:28 PM

Destro (24.27.104.252)
Regrowth.com Member

Registered: Jan 2007
Posts: 254
[Ignore]

xxx is wrong on whether it can penetrate the skin!! Simple task, take a laser, put the output on the soft part of your thumb and press hard. You will see the laser illuminate the tissue in your thumb from the side. Now, whether that will grow hair...I am still out with my judgment but I am a hoping SOB.

Last Edited On Jul-22-2009 at 12:30 AM.

Moderator Commands:

6/26/2009 11:29 PM

OverMachoGrande (74.178.220.209)
Regrowth.com Member

Registered: Oct 2006
Posts: 6,636
[Ignore]

Chore Boy... didn't you hear? Lasers CAN'T penetrate the skin. There is a video on it and everything.

Moderator Commands:

6/26/2009 11:32 PM

jdp710 (207.200.116.69)
Regrowth.com Member

Registered: Apr 2008
Posts: 2,271

Alright, time to start the spam, lol

"Photobiomodulation by red to near-IR radiation has been demonstrated to enhance mitochondrial activity and promote cell survival in vitro by stimulation of cytochrome oxidase activity"

"They also suggest that photobiomodulation may enhance recovery from retinal injury and other ocular diseases in which mitochondrial dysfunction is postulated to play a role."

"Another important observation was that cells maintained under the condition of nutritional deficiency had both membrane and genetic material that was more preserved in comparison to the controls, in which the presence of an apoptotic nucleus could be observed in some cells. The results of the present study

[Ignore]

demonstrate that LLLT, in addition to providing positive biomodulation, acts in the re-establishment of cellular homeostasis when the cells are maintained under the condition of nutritional stress; it also prevents apoptosis in CHO K-1 cells"

The gene expression profiles revealed hat 111 genes were regulated by the red light irradiation and can be grouped nto 10 functional categories. Most of these genes directly or indirectly play oles in the enhancement of cell proliferation and the suppression of apoptosis. To signaling pathways, the p38 mitogen-activated protein kinase signalling pathway and the platelet-derived growth factor signaling pathway, were found to be involved in cell growth induced by irradiation of low-intensity red light. Several genes related to antioxidation and mitochondria energy metabolism were also found to express differentially upon irradiation."

www(dot)laser(dot)nu/llit/science(dot)htm

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www(dot)laser(dot)nu/llit/science(dot)htm

The 2005 Clinical Client Survey of 375 people participating in the Sunetics Laser Hair Therapy program showed that:

78% had an appearance of Thicker hair

76% had an appearance of Fuller Hair

64% had an appearance of Shinier Hair

86% had an appearance of Healthier Hair

85% Perceived that their hair looked better

84% were Pleased with the program

www(dot)sunetics(dot)com/default(dot)aspx?ctxt=clinicalstudies

Here is a study using mice. Keep in mind that laser brushes will not be able to get your scalp in the necessary 4 or 5 joules that it used in LLLT wound healing, etc. studies unless you're going to use a laser brush for hours per day so you'll see very limited results when using a laser brush because of that.

With that said, you can apply some of the information in the studies used on mice towards our application as their bodies are much smaller and will get the 4 or 5 joules in the area.

Here's a laser brush study used on mice

"ABSTRACT

1. The mouse irradiated by the Leimo showed 30% increase in the hair growing speed.

2. The region irradiated by the Leimo shows the hair growing speed and the density much higher than the region not irradiated by the LEIMO

3. As a result of the observation of tissue sample for the cause analysis, it was found that the hair follicles was newly formed in the dermis irradiated by the LEIMO"

more info = www(dot)laserhaircomb(dot)com/clinical/

This link gives a very good understanding on how LLLT works and I'd highly recommend to read this.

www(dot)brogemeyer(dot)dk/Laser-Accelerated(dot)html

Here is a good quote

Compromised cells and tissues respond more readily than healthy cells or tissues to energy transfers that occur between LLLT-emitted photons and the receptive chromophores found in the various cells and sub-cellular organelles. Cells and tissues that are ischemic and poorly perfused as a result of inflammation, edema and injury have been shown to have a significantly higher response to LLLT irradiation than normal healthy structures.Cell membranes, mitochondria and damaged neurological structures exhibit less than optimal metabolism and stasis conditions. Multiple studies have demonstrated that under these compromised conditions, the introduction of energy transfers and the resultant enhancement of metabolic activity is most pronounced in biologically challenged components. While it may appear that LLLT is thus selectively targeting compromised cells, in reality, these cells exhibit a lowered reaction threshold to the effects of laser light and are more easily triggered to energy transfer responses. The result is that LLLT has a significant effect on damaged cells and tissues while normative biological constituents are appreciably less affected.1

The cellular cascade effect — precipitated by the actions of enzymes and having a significant in the presence of LLLT — has a significant impact on cellular and tissue function. Since a considerable number of the reactive proteins that respond to laser stimulation are enzymes, laser light effects are amplified in the stimulation of beneficial enzymes and depression of deleterious enzymes.

At the cellular level, cytochromes can be defined as electron or proton-transfer proteins that act as energy producers for human biological functions. Both of the cytochrome enzymes, Cytochrome c Oxydase and Nitric Oxide Synthase (NOS) have been found to be particularly reactive to laser photon stimulation. The particular affinity of these and other photo-reactive enzymes to accelerate their functions in the presence of LLLT provides critical increases in the molecule ATP and Nitric Oxide (NO) which enhances cellular metabolism, circulatory improvement and nerve function.

Although the various actions of LLLT in regards to inflammation, pain and healing have been separated categorically here for the purpose of process identification, their interactions are not so easily distinguished. In response to LLLT, the reduction in inflammation, pain and healing time all compliment each other and many of the processes are either simultaneous or overlapping.

Acute Inflammation Reduction.

Immediately after an acute injury event, the body, in response to the disruption of the integrity of vascular, soft tissue, connective tissue and neurological processes, initiates a series of biological responses. The inflammatory reaction consists of both vascular and cellular events. Injury responsive components such as Mast cells, Bradykinins and Prostaglandins are activated along with the vascular responses and cellular membrane reactions. All of these combined processes and events are represented by the symptoms of edema, inflammation, pain and functional debility. LLLT can be effective in mediating both the symptoms and the underlying inflammatory process by the following actions: jdp710 Full Member enjoys 5% discount

Joined: 16 Oct 2008 Posts: 29 Tue Apr 28, 2009 12:08 pm Quote "The treatment of blood with low intensity laser irradiation has become popular in a variety of clinical applications due to its anti-inflammatory, biostimulative and immune-stimulatory effects etc. Laser blood irradiation with infrared and red laser sources have the potential for stimulating antioxidant enzymes activities. At present study the influence of red and infra-red laser irradiation at different doses on superoxide dismutase (SOD) activity of peripheral blood lymphocytes was investigated in vitro. Suspensions of human lymphocytes (concentration of cells 1x106 cells/ml) were irradiated with red (670 nm) and infrared (980 nm) therapy lasers at different light doses (0-600 J/sample) and light power (4,5 and 15 mW for red; 50 and 500 mW for infrared) at 20°C. It is revealed doze-depended effect of red and infra-red laser irradiation on superoxide dismutaze activity of peripheral blood lymphocytes. The SOD activity, first of all, depends on irradiation time, but not on intensity or wavelength of irradiation. These data can explain the positive medical effects of a laser blood irradiation. The obtained results confirm a hypothesis that laser irradiation with the different wavelength characteristic (red and infra-red light ranges) reveals a stimulating effect on SOD - antioxidant defence system enzyme in peripheral blood lymphocytes."

"S.O.D. is proven to heal and reverse fibrosis "

"Studies have shown that SOD acts as both an antioxidant and anti-inflammatory in the body, neutralizing the free radicals that can lead to wrinkles and precancerous cell changes. Superoxide Dismutase has also been used to treat arthritis, prostate problems, corneal ulcers, burn injuries, inflammatory diseases, inflammatory bowel disease, and long-term damage from exposure to smoke and radiation, and to prevent side effects of cancer drugs. In its topical form, it may help to reduce facial wrinkles, scar tissue, heal wounds and burns, lighten dark or hyperpigmentation, and protect against harmful UV rays."

info taken from here

www(dot)overmachogrande(dot)com/index.php?/omg/personal_notes/the_importance_of_sod_and_why_5mw_laser_diodes_are_great/ "Our Body is made up of approximately five trillion individual cells. Each cell must supply its own vital energy called ATP (adenosine triphosphate). Every job a cell must perform needs to be done with the aid of ATP. Light is the only medication that can directly increase the production of ATP. Our cell power plant, the Mitochondria, converts photon energy (light energy) into ATP (cell energy), when there is a deficiency. Research has shown that low level laser therapy can increase cellular ATP (body fuel) by as much as 150%.

This new fuel is then available to carry out the many repair and regenerative functions of our cells. In essence, there is more energy to expel waste products, and replace nutrients and proteins, the building blocks of our cells. LLLT increases lymphatic drainage by doubling the size of the lymphatic drainage ducts. This allows easier movement of cellular waste products and older protein by-products of cellular metabolism or tissue injury. The result is a rapid reduction in fluid retention, swelling, and inflammation. The increased collagen and epithelial production is also accompanied by the production of new capillaries and an increase in the density of the capillary bed. There is a rapid formation of many proteins, including collagen, a clear sticky substance, which is nature's "repair" material. This newly formed collagen can then be used to regenerate tissue that once had been damaged.

The laser energy also changes the electrical potential across cell membranes. This causes a desensitization of nerve cells, which results in the reduction of pain impulses.

Osmosis states that no nutrient can transfer across the depolarized membrane of an injured cell. One of the most important functions of low level laser therapy is to re-polarize sick and injured cellular membranes. This allows for essential nutrients to transfer from the blood into the cell.

In summary, the photons produced by laser light normalise tissue by activating enzymes within cells, which triggers a chemical reaction in which more enzymes are activated in a domino-type effect. Low level laser therapy has no effect on normal tissue. Photons are only taken up by cells that need them. How much light?

However, caution should be used not to overuse low level laser light. Overstimulation, whilst not having the potential to cause harm, can undo the good that

the correct dose would have achieved. Excessive biostimulation is not beneficial. Kinesiology, or muscle testing, is an excellent way of determining how much the body requires. Another way, if pain is involved, is to note improvement in pain level as a guide to dosage.

SUMMARY OF HEALING EFFECTS

Light bio-stimulation influences functions in the following ways:

• Acceleration of the inflammatory stages, to achieve quicker healing - bursitis, tendonitis, arthritis,

• the general healing of wounds and injuries – diabetic ulcers, venous ulcers, bed sores, mouth ulcers, fractures, tendon ruptures, ligamentous tear, torn cartilage etc.

• Pain control - low back pain, neck pain, pain associated with inflammatory conditions, Carpel Tunnel Syndrome, arthritis, tennis elbow, golfer's elbow, post herpetic neuralgia, muscle cramps etc.

• Stimulation of cellular replication (which is the key to healing and the production of healthy tissue)

• Increase of DNA and RNA synthesis

• Stimulation of collagen production (collagen is the main supportive protein of skin, tendon, bone, cartilage and connective tissue.) – excellent for beauty therapy, wrinkle management, acne

• Alteration of the immune system (helps immune cells combat infection)

• Stimulation of fibroblast activity (aids in the production of collagen)

• Enhancement of vascularisation (aids in improving circulation - poor circulation in diabetes, massage therapy, relaxation

• Stimulates the sodium potassium pumps in cell membranes which enables transport of essential nutrients into cells to allow healing.

www(dot)lightforhealth(dot)co(dot)uk/content/light-and-the-body(dot)pdf

Here is an interesting study regarding various power density (low vs higher powered lasers) and joules (treatment times).

www(dot)healinglightseminars(dot)com/listing/Tendonitis(dot)pdf Here is a link for a positive LLLT testimonial thread I've been collecting. The first 8 testimonials are where before and after pics are located.

http://www.regrowth.com/hairloss-forums/viewthread.cfm?f=1&t=23460

This info is regarding laser blood irradiation. Laser blood irradiation is shining a laser on an artery to get laser light into your blood stream. There is also IV laser blood irradiation that can be used in a hospital setting. Here's some interesting info for those that want to try which is basically copy and past info from the web

---

"the improvement of rheological characteristics of the blood and microcirculation, normalization of parameters of hormonal, immune, reproductive and many other systems.

After blood irradiation the decrease of concentration of cholesterol, triglycerides, lipoproteins and glucose was also detected in patients with originally increased values. No signs for blood cell damage was obtained. The blue light blood irradiation therapy helped to keep the level of atherogenic lipids in the blood of patients with atherosclerosis relatively low for several months.

Activation of microcirculation is one of the most pronounced effects of IV LBI. The improvement of microcirculation after IV LBI was detected in all structures of the central nervous system.

It can improve the blood microcirculation, increase nutrients and oxygen supply to different tissues.

positive influence of the activity of immune system was found. All the above mentioned results was detected after a single procedure of blood irradiation, and repeating treatments made results of therapy stronger.

The decrease of low-density lipoproteins and cholesterol amount in the blood serum was detected.

It was proposed, that increasing levels of NO [nitric oxide]can be results of light irradiation of blue and red band."

http://www.emred.fi/htmls_en/laser_blood_irradiation_therapy_en.html#TLBI

"used for its biostimulative, analgetic, antiallergic, immunocorrective, antitoxic, vasodilative, antiarrhythmic, antibacterial, antihypoxic, spasmolytic, anti-inflammatory and some other properties

activates nonspecific mechanisms of anti-infectious immunity. Intensifying of bactericidal activity of serum of the blood and system of the complement, reduction of the degree of C - reactive protein, level of average molecules and toxicity of plasma, increasing the content of IgA, IgM and IgG in the serum of the blood, as well as decreasing of the level of circulating immune complexes are proved.

improving the rheological properties of blood, rising fluidity and activating transport functions. That is accompanied by increasing the oxygen level, as well as decreasing the carbon dioxide partial pressure.

It was proved that IV LBI reduces aggregation ability of thrombocytes, activates fibrinolysis, which results in peripheral blood flow velocity increasing and tissues oxygenation enriching. The improvement of microcirculation and utilisation of oxygen in tissues as a result of IV LBI is intimately linked with positive influence on metabolism: higher level of oxidation of energy-carrying molecules of glucose, pyruvate, and other substances.

unblocking of capillaries

positive influence practically on all tissues and functional systems of the body"

http://www.laserpartner.org/lasp/web/en/2003/0058.htm

"As shown in physiological and physiochemical tests, this laser irradiation technology can rapidly alter the flow conditions of blood and oxygen in the body. From increased micro-circulation, strengthened blood cells, increased cell metabolisms, increased immune system functions, and faster tissue regeneration this technology is very beneficial to the total functional parameters of the human body."

http://www.chinatech.com/irradiation.htm

"C-reactive protein measures general levels of inflammation in your body."

http://www.revolutionhealth.com/articles/c-reactive-protein-crp/tu6309?ipc=B00232

"reduction of the degree of C - reactive protein [due to laser blood irradiation]"

http://www.laserclinic london.com/phdi/p1.nsf/supppages/2522?opendocument&part=5

"High CRP levels are related to inflammation, and chronic inflammation is associated with insulin resistance, hypertension, type 2 diabetes, atherosclerosis, and more recently hair loss."

http://news.hairlosshelp.com/hair-loss-news/research-shows-how-your-diet-can-affect-your-hair-loss/

"You can even get light into the blood stream. One of the best ways is through your belly button, because the aorta artery is behind the belly button. So if you insert the light there for 20 minutes, every drop of blood in the body will pass in front of the light,"

http://209.85.173.132/search?q=cache:w-IFUhDlwSIJ:www.naturalawakenings.com/natural_health/natural_health_tips_23.htm+laser+blood+irradiation+belly+button&hl=en&ct=clnk&cd=7&gl=us&ie=UTF-8

another quote from another site

"Likewise, irradiating the belly button will treat the entire bodily blood supply in 20 minutes, the aorta passing just behind it" http://pdtlights.com/

Earlier, it was reported that chronic UV exposure of hairless mice for 2 h per day with a source mainly emitting UVA including 2% UVB, resulted in a significant increase in SOD activity that, however, following continued irradiation for 24 wk, substantially decreased below the level of mock treated animals These results suggest that chronic UV exposure for months, even at suberythermal doses, may compromise the SOD-dependent antioxidant defense."

http://www.nature.com/jid/journal/v112/n1/full/5600376a.html

And as far as the information that the reason for LLLT success is due to increased ATP production it's because of quotes like this that get my attention

"To paraphrase NASA research:

The mechanism of photobiomodulation by red to near-IR light at the cellular level has been ascribed to the activation of mitochondrial respiratory chain components, resulting in initiation of a signaling cascade that promotes cellular proliferation and cytoprotection."

Moreover, 660-680 nm of irradiation has been shown to increase electron transfer in purified cytochrome oxidase, increase mitochondrial respiration and ATP synthesis in isolated mitochondria"

Here's some good information about mitochondria to help back up my argument about unhealthy mitochondria & reduced ATP production/ability to store ATP = MPB

"Every nucleated cell in the body contains from 5 to 2000 mitochondria Mitochondria consume over 80 percent of the oxygen we breathe and make over 90 percent of the energy our cells need to function. They use the oxygen in the air we breathe to release energy from food. This process transforms food calories into chemical energy, water, and carbon dioxide. The released chemical energy is then stored in the form of adenosine triphosphate (ATP). ATP is the universal currency of energy used by all life on earth. It is like an electrical power source that drives the engines of the cell. This process of burning food to make ATP is called oxidative phosphorylation. Only mitochondria can do it. Without it, muscles could not contract and neurons could not fire. Mitochondria literally make it possible for us to move and think.

Defects in mitochondrial function have now been l inked to many of the most common diseases of aging. These include Type II Diabetes Mellitus, Parkinson Disease, Atherosclerotic Heart Disease, Stroke, Alzheimer Dementia, and Cancer. Over 50 million people in the US suffer from these chronic degenerative disorders. While it cannot yet be said that mitochondria cause these problems, it is clear that mitochondria are involved because their function is measurably disturbed. Even autoimmune diseases such as Multiple Sclerosis, Systemic Lupus Erythematosus, and Rheumatoid Arthritis appear to have mitochondrial

components"

http://biochemgen.ucsd.edu/mmdc/brochure.htm

Lasers increase the mitochondrial production of ATP without increasing the production of free radicals. Anything that increases the production of ATP energy will speed healing and improve symptoms"

"Anything able to compromise ATP production in mitochondria could harm or even kill cells and so cause tissues to malfunction and symptoms to develop."

"Anything that increases the production of ATP energy will speed healing and improve symptoms"

"The mitochondria are the major source for the production of free radicals"

""The overproduction of free radicals can induce cell death"

"The mitochondrial theory of aging [leading theory into why we age] holds that as we live and produce ATP, our mitochondria generate oxygen free radicals that inexorably attack our mitochondria and mutate our mitochondrial DNA." The accumulation of mitochondrial DNA mutations reduces ATP energy output below needed levels"

http://www.todayschiropractic.com/issues/archives/may_jun_05/feat_001.html

"It has been estimated that approximately one trillion cells and over a quadrillion mitochondria replicate every few weeks"

http://www.majidali.com/the.htm

"mitochondria are the source of the free radicals that initially damage the mitochondria, and with time the cumulative damage to these organelles results in the decline of cellular health and eventually cell death. Therefore, one can conceptualize the mitochondria as cellular-time capsules. At birth or perhaps even during fetal development, the clock begins to tick!

it has been clearly demonstrated that cumulative mitochondrial DNA damage is associated with aging."

http://juvenon.com/jhj/vol3no07.htm

"Energy in the body is produced in the form of ATP (adenosine triphosphate—present in all living tissue ... through the process of cellular respiration."

http://vitanetonline.com/forums/1/Thread/1058

"In a study published today in Science, researchers led by UCLA molecular medicine professor Douglas Wallace modified a single mitochondrial gene in mice.

Their hearts quickly wore out and broke down.

Mitochondrial defects, which accumulate naturally during the course of a lifetime, have previously been found in diseased human heart tissue. However, it wasn't clear whether the defects were a cause or an effect of heart disease. The UCLA findings offer direct evidence of a causal connection.

By finding ways to rejuvenate or protect these cellular power generators, it may be possible to prevent heart disease, which kills over 600,000 Americans every year -- and that could be just the start.

"This provides strong support for the concept that aging and age-related diseases are associated with a decline in mitochondrial functional associated with the age-related destruction of mitochondrial DNA," said Wallace in an email."

http://blog.wired.com/wiredscience/2008/02/could-malfuncti.html

"A growing body of evidence has demonstrated a link between various disturbances in mitochondrial functioning and type 2 diabetes.

This article demonstrates that type 2 diabetes is not merely a disease of insulin insensitivity or lack of insulin release but may be a global dysfunction of the mitochondrial energy system."

http://findarticles.com/p/articles/mi_m0FDN/is_2_7/ai_85522983/pg_12?tag=content;col1

"Magnesium (Mg) is an intracellular cation. It is an essential element which catalyses more than 300 enzymatic reactions, in particular those involving ATP."

http://www.ncbi.nlm.nih.gov/pubmed/9529585?dopt=Abstract

"ATP requires magnesium in order to be stable. Without magnesium, ATP would easily break down into other components, ADP and inorganic phosphate."

"Magnesium deficiency promotes excessive muscle tension"

" a magnesium deficiency appears to create resistance to insulin, Insulin resistance increases levels of insulin, which may result in a form of diabetes"

"Magnesium also appears to be able to also affect the nervous system by regulating the release of hormones"

http://web.mit.edu/london/www/magnesium.html

"Magnesium is at the center of life's ability to absorb light and change its electromagnetic energy into organic chemical energy."

".... The result is that with low magnesium levels the mitochondria gradually calcify and energy production decreases"

http://www.life-enthusiast.com/twilight/research_magnesiumchloride.htm

"The main and the most important effect of laser light on cells is the accelerated production of the ATP (Adenosine TriPhosphate). ATP molecules are found in the cells of all living things. In animal and human systems, Adenosine TriPhosphate is synthesised in small cellular organelles called mitochondria. In the mitochondria, the primary cellular energy source - the ATP - is produced by combining oxygen with sugar derived from food.

ATP can be described as the 'energy carrier' or the 'energy shuttle' capable of harnessing the chemical energy generated from the breakdown of the foodstuffs and transporting it across cellular membranes for conversion into 'fuel' that is required for normal body functioning. Adenosine TriPhosphate is often referred to as the 'energy currency of life'.

If a person has insufficient levels of ATP available, the energy cannot reach the tissues. This can lead to a variety of health problems, such as a susceptibility to infectious diseases, poor wound healing, inflammation and swellings.

In short - the low level laser therapy devices (soft lasers or cold lasers) deliver light into living tissues (this process is also referred to as 'phototherapy'), increasing the ATP and shuttling more energy and nutrients around the body for healthy metabolism and the appropriate functioning of organs."

http://www.emeraldcoastlipolaser.com/images/info/info-1.pdf

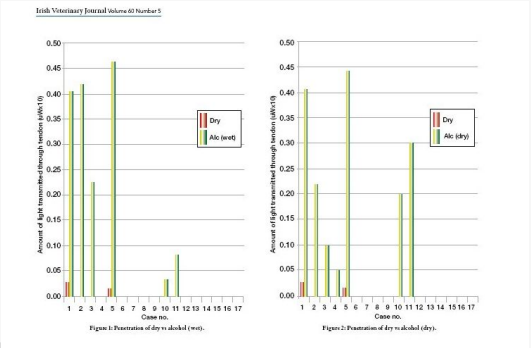

Figure 1: Penetration of dry vs alcohol (wet).
Figure 2: Penetration of dry vs alcohol (dry).

"]

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6/27/2009 12:12 AM

jdp710 (207.200.116.69)
Regrowth.com Member

Registered: Apr 2008
Posts: 2,271
[Ignore]

	Mean amount of light transmitted (uW/x10)	
	Grey (n=5) Mean lateromedial dimensions (diameter) 3.28cm	Bay (n=12) Mean lateromedial dimensions (diameter) 2.3cm
Dry i.e., untreated	0.01	0
Cleaned with alcohol (wet)	0.30	0.01
Cleaned with alcohol (dry)	0.25	0.04
Clipped	1.24	0.18
Clipped and cleaned with alcohol	1.12	0.28

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more info = http://www.irishveterinaryjournal.com/Links/PDFs/Peer/Peer_May_2007.pdf

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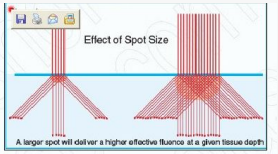

This graph shows why a larger spot size is more ideal = greater absorption

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CONCLUSION

The Arndt-Schultz Law[34] states that there is a threshold amount of energy (laser light) that is required to effect a change in cellular activity. When the dosage is increased above threshold, the degree of cellular biological activity also increases. When the dosage increases further, above a certain level a plateau effect occurs with no increase in cellular activity. When the dosage is increased above the plateau level, there is an inhibitory effect upon the cells.[34] The results show that the correct energy density or fluence (J/cm^2) and number of exposures can stimulate cellular responses of wounded fibroblasts and promote cell migration and cell proliferation by stimulating mitochondrial activity and maintaining viability without causing additional stress or damage to the wounded cells. Results indicate that the cumulative dose administered on 1 day determines the stimulatory or inhibitory effect of the laser irradiation on cellular responses. This study has identified that a single dose of 5 J/cm^2 or multiple exposures of 2.5 J/cm^2 with adequate time between exposures may be effective in the treatment of wounds in the clinical situation by accelerating wound closure. A single dose of 5 J/cm^2 or multiple exposures of 2.5 J/cm^2 promotes wound healing by stimulating migration, mitochondrial activity, and proliferation of wounded fibroblasts, while maintaining viability and without causing additional stress or damage to the cells.

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activity from additional stress and damage to the cells whereas lower doses (2.5 or 5.0 J/cm^2) and fewer exposures do not induce higher levels of apoptosis or cellular damage.

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incubation was continued for 24 h. The study concluded that irradiated cells revealed a considerably higher proliferation activity 24 h after irradiation but decreased in an energy-dependent manner after 48 and 72 h. The results indicated that repeated

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dose at the next treatment), it is vital that treatments are not too close together, so as to avoid a situation where the accumulated dose eventually ends up above the biostimulating range or even in the bioinhibitory range, with consequently poorer results[1] (Fig. 9).

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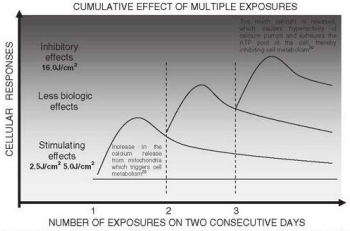

FIG. 9. Laser therapy has been shown to be cumulative. The dose from one treatment lasts some time and what "remains" of the dose is added to the dose at the next treatment. Adequate time between doses is essential to allow the cells time to respond to the initial dose and will also avoid a situation where the accumulated dose eventually ends up above the bio-stimulating range or even in the bioinhibitory range, with consequently poorer results.[1]

more info = http://www.overmachogrande.com/index.php?/omg/studies/effect_of_multiple_exposures_of_lllt_on_the_cellular_responses_of_wounded_h/

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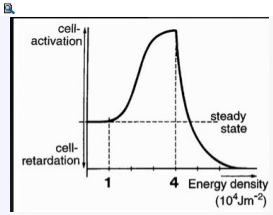

"Scientists have shown the therapeutic efficacy of LLLT is enhanced by repetitive low doses within a specific time in contrast to the same total dose in a single treatment "

"In addition, the biomodulation effects of LLLT are cumulative. Repeated doses within relatively short intervals produce greater biological responses"

more info = http://www.lazrpulsr.com/pdf/Article17505.pdf

"The favorable cumulative results of complete flatness to moderate response obtained for scars younger than 6 months were over 90%, this was reduced to 40% in scars aged between seven to twelve months and to a mere 3% in scars older than 12 months. These results suggest almost an inverse exponential relationship between the age of the scars and the responsiveness to laser treatment. Put in simple mathematical terminology, for each month of delay in laser treatment, the rate of failure increases by 5%. Therefore, for better beneficial outcome of these types of patient, it is recommended that burn scars be treated as soon as possible."

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Duration of burn scars (months)	*Completely disappeared*	*Moderately reduced*	*No change*	*Total number of patients*
1-6	84***	25+++	11***	120
7-12	12	28	48	100
>12	0	3	93	100

http://www.pjms.com.pk/issues/aprjun06/article/article13.html

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"However, it elicited significant effects on working memory, with the IR [Infrared] middle-aged mice being more considerate in their decision making, which results in an overall improved cognitive performance which is comparable to that of young CD-1 mice

Middle-aged mice show significant deficits in a working memory test and IR treatment reversed this deficit"

http://blog.thorlaser.com/2008/01/25/remember-to-read-this/#more-20

"In desperation, his family agreed to try a revolutionary new treatment - a bizarre-looking, experimental helmet devised by a British GP that bathes the brain in infra-red light twice a day. To their astonishment, Mr Fennel began to make an astonishing recovery in just three weeks.

"Honestly I can tell you that within ten days, the deterioration was stopped, then we started to see improvements," said Mrs Fennell, from North Kentucky. "He started to respond to people more quickly when they talked to him."

Three weeks later, the father of two is still making gradual improvements. His daughter, 22-year-old Maggie said: "When we go to the restaurant we usually have to order his meals for him, now he can order for himself."

"Now we are okay about letting him go to the bank or the post office but he would not have been able to do that three weeks ago."

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http://www.dailymail.co.uk/health/article-1034936/Dementia-patient-makes-amazing-progress-using-infrared-helmet.html

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Test done on Aixiz 5 mW laser diode used in Lasermax, Laser Mesiah and other laser hoods

"2.790mW 4.7616mW (lens removed, point blank)"

more info = ledmuseum.candlepower.us/eighteen/redlas.htm

"

Irradiation Dose: The product of power density (mW) and exposure time defines the irradiation dose and is measured in Jules of energy per square centimeter (J/cm2). This is an extremely important parameter for laser treatment and biomodulation. Scientists have shown the therapeutic efficacy of LLLT is enhanced by repetitive low doses within a specific time in contrast to the same total dose in a single treatment (Abergel, et. al., 1984). In addition, the biomodulation effects of LLLT are cumulative. Repeated doses within relatively short intervals produce greater biological responses than single frequency lasers (Mester, Mester, Mester, 1985). Doses, which are too low, produce no effect. Doses, which are too high, produce no effect or dampen biological activity (Kana et. al., 1981). Each biological tissue has an optimal dose, which is laser dependent [e.g., skin: 1 J/cm2 – HeNe laser (Mester, 1986); Fibroblast: < 1 J/cm2 – GaAs laser (Abergel et. al., 1984); Trigger point doses: 0.1 J/AP-point regardless of laser type (Karu, 1988)].

Power density from 2 to 5 mW is adequate to activate mammalian chromophores. Power higher than 5 mW may exceed the activation levels of some chromophores. The greatest biomodulation is created with repeated doses of pulsed collimated laser light at or around 5 mW of power. "

In conclusion, for safe and effective light therapy, the ideal therapy device should be a low powered (between 2 and 5 mW),

more info = http://www.lazrpulsr.com/pdf/Article17505.pdf

Info regarding LLLT in preventing and reversing gray hair to a limited extent and also shows that not only does our skin absorb laser light but our hair also absorbs laser light as well.

"Studies of hair-bearing human skin

The ESR spectrum of a dark-haired human scalp biopsy is shown in Fig. 2a and comprises a weak background signal due to melanin (17). Ultraviolet irradiation of this sample gave an immediate doublet of the ascorbate radical superimposed upon the melanin signal (Fig. 2b). During irradiation, the combined intensities of the melanin and ascorbate radical signals are approximately three times the intensity of the melanin signal before illumination, and the signals returned to their original intensity when the light was turned off. This is believed to reflect both photoinduced melanin free-radical formation (18) and photosensitized oxidation of ascorbate to the ascorbate radical (either via melanin (19) or via other photosensitizers within the skin itself) and confirms activation of endogenous photosensitizers by UVR and freeradical production in human hair-bearing skin. Application of t-butylhydroperoxide to the epidermis of skin from the same patient gave the ascorbate radical (Fig. 2c); however, after exposure to the ruby laser (five pulses 17 J cm^sup -2^) the spectrum shown in Fig. 2d was obtained (immediately after lasering). A marked increase in the intensity of the melanin signal was observed, but the ascorbate radical could not be detected. Unlike the melanin signal increase induced by UV light, the laser-induced signal increase was found to be irreversible (the signal remaining the same intensity 24 h later) and could reflect either photo- or thermal formation of melanin free radicals. The results show that, although laser light is absorbed by melanin (in the hair and hair follicles) to produce melanin free radicals, this is not accompanied by oxidation of ascorbate (in marked contrast to UV irradiation of similar biopsies). These results show that ruby laser irradiation of hair-bearing skin is not associated with detectable free-radical production."

http://findarticles.com/p/articles/mi_qa3931/is_199909/ai_n8855339/pg_2

"The results show that ... laser light is absorbed by melanin (in the hair and hair follicles) Red light lasers have been shown to:

Increase melanin production (this only happens during the anagen phase). The laser can also help to reduce gray hairs."

http://www.newportbeachwellnesscenter.com/content/laser-hair-restoration-newport-beach

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debate regarding effectivness regarding LLLT coherent light vs LED, etc. non coherent light =

http://www.laser.nu/lllt/laser_discussion.htm

Here is a good quote "... the more "odd" light we are expose to, the more response we can expect. If the lights band-width increases, the effector loses power to induce adaptive reaction (even if this light still is considered monochromatic, at some degree, it may be not so unique evolutionary as the light with less band-width).

"a HeNe [632 nm] laser with a power output of 3.5 mW has a greatest active depth of 6-8 mm depending on the type of tissue involved. A HeNe laser with an output of 7 mW has a greatest active depth of 8-10 mm"

http://www.laser.nu/lllt/Faq1.html#How%20deep%20into%20the%20tissue%20can

"As a gereral rule, optimal biostimulation is effected by the application of smaller dosages-per-point to more points at the treatment site.

Optimal bioinhibition is achieved through applying higher dosages-per-point, but to fewer treatment points."

http://www.spectramedics.com/llltinfo.htm

". Scientists have shown the therapeutic efficacy of LLLT is enhanced by repetitive low doses within a specific time in contrast to the same total dose in a single treatment "

http://www.lazrpulsr.com/pdf/Article17505.pdf[/quote]

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6/27/2009 12:17 AM

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"A Japanese group reported on the use of Super Lizer (a linear polarized light source providing 1.8 W of 600 to 1600nm light) to treat alopecia areata. Three minute sessions every one or two weeks produced significant hair growth compared to non-treated lesions in 47% of patients."

"IncreasedRNA and protein synthesis was demonstrated after 5J/cm2. Pastore et al found increased activity ofcytochrome c oxidase and an increase in polarograph-ically measured oxygen uptake after 2 J/cm2of HeNe.A major stimulation in the proton pumping activity,about 55% increase of H+/e- ratio was found in illu-minated mitochondria. Yu et al used a 660 nm laser ata power density of 10 mW/cm2and showed increasedoxygen consumption (0.6 J/cm2and 1.2 J/cm2),increased phosphate potential, and energy charge (1.8J/cm2and 2.4 J/cm2) and enhanced activities ofNADH: ubiquinone oxidoreductase, ubiquinol: ferricy-tochrome C oxidoreductase and ferrocytochrome C oxygen oxidoreductase (0.6 J/cm2, 1.2 J/cm2, 2.4 J/cm2and 4.8 J/cm2)."

"Another report found a greater effect of LLLT in stimulating wound healing in malnourished compared to normallyfed rats."----------

---

---------- LLLT for Hair Regrowth

Since the first pioneering publication of Mesterreported stimulation of hair growth in mice, there havebeen virtually no follow-up studies on LLLT stimula-tion for hair growth in animal models. Mester's studyinvolved delivering 1 J of pulsed light (one millisecondpulse duration) into a 1 cm2spot from a ruby laser at694 nm to the depilated abdominal area of black C57and white Balb/c mice every week for up to 11 weeks.Before each successive treatment the skin was againdepilated. Increased hair growth in the irradiated spotwas observed in all black animals between the fifthand seventh treatment. This reaction continued to theninth treatment and it was characteristic of the hairgrowth intensity that in places which were completelybare at the time of the respective irradiation, hairgrowth as dense as on other body parts was observedonly four to six days after the irradiation.On the other hand, it was found after the ninthirradiation that hair growth stopped in the irradiatedlocations only. Instead, a peripheral, ring-shaped hairgrowth was observed around the irradiated area. Thisring-shaped hair growth first appeared on the animalwhich the central growth stimulation was firstobserved. The peripheral growth appeared in all treat-ed black mice between the seventh and ninth irradia-tion with the intensity varying from mouse to mouse.In white mice no effect on hair growth was detected upto the eighth irradiation. The central growth describedfor black mice only began to form after the eighth irra-diation. Further irradiation caused the hair growth asdescribed in some of the mice, but the peripheral hairgrowth characteristic of the second phase was alreadyappearing in some as well. The hair growth of the con-trol animals developed as follows: The depilated skingrew hair slowly and diffusely. However, on half of thecontrol animals (both among black and white mice), nofurther hair growth whatsoever was observed. At thesame time, a diffuse hair growth appeared on someanimals, but in other animals an uncharacteristic,sometimes diagonal strip appeared.Despite the fact that LLLT devices are widely mar-keted and used for hair regrowth, there have been onlya few written reports containing some observations ofLLLT-

induced hair growth in patients, and ameliora-tion or treatment of any type of alopecia. A Japanesegroup reported on the use of Super Lizer (a linearpolarized light source providing 1.8 W of 600 to 1600nm light) to treat alopecia areata. Three minute ses-sions every one or two weeks produced significant hairgrowth compared to non-treated lesions in 47% ofpatients. A Spanish group has reported on the use ofHeNe laser for both alopecia androgenic and areata. A report from Finland compared three different lightsources used for male pattern baldness (HeNe laser,InGaAl diode laser at 670 nm and non-coherent 635nm LED and measured blood flow in the scalp.Recent work has uncovered some biological mecha-nisms involved in the regulation of hair growth thatcould be good candidates to explain the stimulatingeffects of LLLT. Peters et al found that Nerve GrowthFactor (NGF) promotes proliferation via its high affinityreceptor (TrkA), and identified NGF and p75 as impor-tant hair growth terminators. By rtPCR we found, thatNGF/proNGF mRNA levels peak during early anagen immune back skin while NGF/proNGF protein levelspeak during catagen, indicating high turnover in earlyanagen and protein accumulation in catagen. Byimmunohistochemistry, NGF and TrkA were found inthe proliferating compartments of the epidermis andhair follicle throughout the cycle. Commercial 7S NGF,which contains both NGF and proNGF, promotes ana-gen development in organ cultured early anagen mouseskin, while it promotes catagen development in late ana-gen skin. Therefore the data suggests an anagen pro-moting/supporting role for NGF/TrkA.Another report from this group studied the expres-sion and function of p75 neurotrophin receptor(p75NTR), which is implicated in apoptosis control inspontaneous catagen development in murine skin.They found that p75NTR alone was strongly expressedin TUNEL+/Bcl2-keratinocytes of the regressing outerroot sheath, but both p75NTR and TrkB and/or TrkCwere expressed by the non-regressing TUNEL-/Bcl2+secondary hair germ keratinocytes. There was signifi-cant catagen retardation in p75NTR knockout mice ascompared to wild-type controls. Instead, transgenicmice over expressing NGF (promoter: K14) showedsubstantial acceleration of catagen.Schwartz et al reported in 2002 that helium/neonlaser irradiation (3 J/cm2) augmented the level of NGFmRNA fivefold and increased NGF release to the medi-um of myotubes cultured in vitro. This correlated witha transient elevation of intracellular calcium in themyotubes. Yu and co-workers found a significantincrease in nerve growth factor release from culturedhuman keratinocytes. Therefore it is postulated thatLLLT may influence hair regrowth via theNGF/p75NTR signaling system.Zcharia and colleagues identified the endoglycosi-dase, heparanase, as an important regulator of murinehair growth. Degradation of the extracellular matrix bar-rier formed by heparan sulfate by heparanase enablescell movement through extracellular barriers and releas-es growth factors from extracellular matrix depots, mak-ing them bio-available. This allows follicular stem cellprogeny migration and reconstitution of the lower part ofthe follicle, which is a prerequisite for hair shaft forma-tion. Heparanase contributed to the ability of the bulge-derived keratinocytes to migrate through the extracellu-lar matrix barrier in vitro. In heparanase over express-ing transgenic mice, increased levels of heparanaseenhanced active hair growth and enabled faster hairrecovery after chemotherapy induced alopecia.Thymosin beta4 (TB4) is a 43-amino acid polypep-tide, an important mediator of cell migration and dif-ferentiation, also promotes angiogenesis and woundhealing. Philp et al reported that TB4 stimulated hairgrowth in normal rats and mice. A specific subset ofhair follicular keratinocytes in mouse skin expressedTB4 in a highly coordinated manner during the hairgrowth cycle. These keratinocytes originated in thehair follicle bulge region, a niche for skin stem cells.Rat vibrissa follicle clonogenic keratinocytes, closelyrelated, if not identical, to the bulge residing stem cells,were isolated and their migration and differentiationincreased in the presence of nanomolar concentrationsof TB4. Expression and secretion of the extracellularmatrix-degrading enzyme matrix metalloproteinase-2was increased by TB4. Thus, TB4 accelerated hairgrowth, in part, due to its effect on critical events in theactive phase of the hair follicle cycle, including pro-moting the migration of stem cells and their immediateprogeny to the base of the follicle, differentiation andextracellular matrix remodeling.A recent report identified the transforminggrowth factor-beta family member, activin, as apotent regulator of skin morphogenesis, repair andhair growth. Mice over expressing the secretedactivin antagonist follistatin, however, have reducedhair growth. Mice expressing a dominant negativeactivin receptor IB mutant (dnActRIB) in ker-atinocytes had unaltered architecture of adult skin,but delays were observed in postnatal pelage hair fol-licle morphogenesis and in the first catagen-telogentransformation of hair follicles.As yet there are no reports of LLLT affectingheparanase, TB4, or activin expression levels in tissueculture or in mouse skin, but these molecules are goodcandidates for further study to explain the hair growthinduction by LLLT.iThe research and production of this paper weremade possible by a grant from Laser Hair Therapy ofNorth America, LLC. 21 Madison Plaza, Suite 129 •Madison, NJ 07940 USA Tel: 1-877-917-4247 • Fax: 1-973-539-7445 http://www.lhtna.com. For the full length ver-sion of this paper with bibliography, please contactLaser Hair Therapy of North America, LLC directly.

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"The physiological effects of laser light at low intensity are not completely understood, but what is known from a biochemical model is often summarized in terms of three main effects :

Bio-stimulation / Tissue regeneration Anti-inflammatory Analgesic

LLLT increases metabolism at the cellular level, causing accelerated ATP production; protein synthesis ; DNA and RNA formation; and many positive markers. At the tissue level, circulation increases during and after the administration of LLLT ; new blood and lymphatic vessels are formed; and collagen synthesis is enhanced. The biochemical model attributes pain relief to a host of factors, including elevated endorphins and acetylcholine; nerve blockade; decreased synthesis of bradykinin; decreased release of histamine; and increased microcirculation to correct ischemia and acidosis."

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http://www.bioline.org.br/request?md05001

"Light of a number of different wavelengths, specifically 660, 820, 870nm, at an energy density of 2.4J/cm2, has been shown to stimulate the ability of macrophages in vitro to release growth factors, which stimulate fibroblast proliferation; in contrast, light of 880nm wavelength was inhibitory (Smith, 1991). At 660nm the stimulatory effect of LLLT is dose dependent for exposure to energy densities of 2.4 - 7.2J/cm2, the upper end of the range being most effective and with 9.6J/cm2 proving to be less effective than 7.2J/cm2."

Long-term (1-year) experience with LDS 100 in the treatment of men and women with androgenetic alopecia

Background. LDS 100 is indicated for the treatment of men and women with androgenetic alopecia (male pattern hair loss, MPHL and female pattern hair loss, FPHL). However, the long-term (> 1 year) efficacy of LDS 100 in this population has not been previously reported.

Objectives. To assess the efficacy and safety of LDS 100 in men and women with androgenetic alopecia compared to treatment with placebo device over 1 year.

Methods. In 6 months, 240 men with MPHL and 80 women with FPHL were randomized to receive LDS 100 treatment or placebo treatment. Men and women continued in up to 1 year, placebo controlled extension studies. Efficacy was evaluated by hair counts, patient and investigator assessments, and panel review of clinical photographs.

Results. Treatment with LDS 100 led to durable improvements in scalp hair over 1 year ($p < 0.001$ versus placebo, all endpoints), while treatment with placebo led to progressive hair loss. LDS 100 was generally well tolerated and no new safety concerns were identified during long-term use.

Conclusions. In men with MPHL and in women with FPHL, long-term treatment with LDS 100 over 1 year was well tolerated, led to durable improvements in scalp hair growth, and slowed the further progression of hair loss that occurred without treatment

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Evaluation of Low Intensity Laser Effects on the Thyroid Gland of Male Mice

Objective: The purpose of this study was to assess whether there were alterations in the thyroid hormone plasma levels under infrared laser irradiation, in the thyroid gland region. Background Data: Studies have demonstrated that infrared laser can cause alterations in thyroid glands. Methods: Sixty-five albino male mice were used and assigned to five groups (n = 13), with differences in the times that they were sacrificed. Irradiation procedures consisted of an infrared diode laser emitting at 780 nm, at 4 J/cm2 energy density, in contact mode, point manner. Blood was collected before irradiation (group 1), and then at 24 h (group 2), 48 h (group 3) and 72 h (group 4), and 1 week (group 5) after the third irradiation. The collected material was used for clinical analysis to evaluate the T3 (triiodothyronine) and T4 (thyroxin) hormones. Five animals were used for light microscopy analysis. Results: A statistically significant hormonal level alteration between the first day and 7 days after the last irradiation was found. Conclusions: It was concluded that low-level laser therapy (LLLT) of the thyroid gland may affect the level of thyroidal hormones.

LLLT also helps AA ....

"Alopecia areata is a rapid and complete loss of hair in one or several patches, usually on the scalp, affecting both males and females equally. It is thought to be an autoimmune disease which is treated with different modalities with variable success. Laser treatment of different wavelengths has been used in the management of this problem.

RESULTS: Seven of 15 (46.7%) of the irradiated areas showed hair regrowth 1.6 months earlier than the nonirradiated areas (chi2 official approval, P = 0.003). With regard to adverse effects caused by Super Lizer trade mark treatment, only one patient complained of a sensation of heat in the irradiated area.
CONCLUSIONS: These findings suggest that Super Lizer trade mark, with its noninvasive properties, is a useful apparatus for the treatment of mild forms of alopecia areata"

http://cooperativemedicine.com/laser_library/Alopecia.pdf

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laser vs led

Would You Take a Knife to a Gunfight? Some time ago, this very question was posted to an Internet laser discussion group in response to the assertion that light emitting diodes (LEDs) and other light sources might work as well in the clinic. This topic was raised again in the June issue of Acupuncture Today. In this article, we will explore how coherence, a property unique to laser light, creates a dynamic, asymmetrical energy distribution within tissue unlike any other light source.

Light waves, which are aligned perfectly in space and time, are coherent. They will unite to increase the amplitude of the combined waveform, and thus, the intensity of laser light.

On the other hand, light waves that are out of phase and opposed will subtract from the strength of the united waveform. If perfectly opposed and equal, they will even cancel one another out.1

Speckling Is Unique to Laser Light Together, constructive and destructive interference produce the visually stunning phenomenon known as speckling. Try this: Shine an optical wavelength or therapeutic laser, even a laser pointer, on white paper or against a wall, and observe how small bits of light will seem to dance and move with a life of their own. This phenomenon can also be detected at depth in tissue being irradiated by a laser.

As a laser beam penetrates tissue, variations in optical density will bend portions of the beam. Speckles are regions where laser light is reinforced or weakened. This uneven distribution of energy, unique to laser light, is dynamic and vibrant. It is almost as if coherent light were alive. In contrast, if you shine a flashlight or LED against a wall or on a piece of paper, you will note that the energy distribution is flat and motionless.

LEDs Are Relatively Low-Powered One reason LEDs are less effective than lasers is that they are relatively low-powered. Intensity (along with wavelength, coherence vs. non-coherence, and absorption/reflection characteristics of the tissue irradiated) plays an extremely important role in depth of penetration and clinical effects of light. The greater the power, the more deeply light will penetrate. Laser therapy is usually applied in contact with pressure, using a single probe that may have a power output of up to 500 milliwatts. In contrast, LED treatment is almost always administered using clusters of light-emitting diodes – yet each of these will usually have an output of 20 milliwatts or less. So, there are at least two reasons for the relatively shallow energy distribution of light from LEDs.

1) non-coherence 2) low intensity

Whereas a therapeutic laser of appropriate power and wavelength can be counted upon to target energy more deeply and specifically, LED clusters are designed to deliver energy relatively superficially over broader regions.

LEDs Have a Relatively Broad Bandwidth The light from LEDs is distributed across a much broader spectrum than that of lasers. Whereas LEDs typically emit across a bandwidth of 30-100 nanometers,2 the spectrum of a laser diode is characteristically 1-10 nanometers. Helium-neon lasers that have very long coherence have an extremely narrow spectral distribution of less than one-tenth of a nanometer.3 The narrower bandwidth of lasers may have significant physiological effects.

Lasers vs. LEDs in the Scientific Literature It should be pointed out that nearly all of the thousands of studies and clinical reports that have investigated the effects of monochromatic light at low intensities have been performed with lasers. The fact that relatively little research has been done with LEDs speaks volumes. Although the physiological effects specific to lasers may be difficult to isolate, the widespread popularity of laser therapy and larger number of laser studies suggests that these differences are significant.

Jan Tuner and Lars Hode have compiled a collection of research comparing therapeutic lasers and LEDs. What follows is a summary of the results of some of these studies paraphrased from their excellent book, Laser Therapy, Clinical Practice and Scientific Background.

Berki, et al., found that helium-neon laser irradiation increased phagocytic activity and immunoglobulin levels in vitro, but non-coherent monochromatic light of the same wavelength and dosage did not.

Bihari and Mester divided patients with crural ulcers into three groups. The best results were achieved by combined laser treatment with both helium-neon and gallium-arsenide lasers. The group that received only helium-neon laser treatment also did nearly as well. The third group, which was treated with non-polarized red light, fared relatively poorly.

Haina, et al., compared the wound-healing effects of coherent and incoherent light at 633 nanometers. In the laser group, granulation tissue formation increased 13 percent at a dosage of 0.5 J/cm2 and 22 percent at a dosage of 1.5 J/cm2. Granulation tissue formation remained at less than 10 percent in the non-coherent group.

Laakso, et al., in a double-blind study of 56 patients comparing the effects of laser therapy and LEDs in chronic pain, found that laser therapy significantly increased beta endorphin and ACTH levels, while LEDs did not.

Lederer, et al., found helium-neon lasers affected white blood cells in migration inhibition assays whereas incoherent light of the same wavelength and power density had no influence.

Muldiyarov, et al., found that helium-neon lasers had a positive therapeutic effect on arthritis in rats whereas treatment with ordinary red light showed no difference from controls.

Nicola, et al., found that helium-neon lasers at 1 J/cm2 accelerated healing more favorably than incoherent light at the same dosage. Nicola, et al., also divided methods of wound treatment into three groups, with a fourth untreated group as a control. The first group was treated with coherent, polarized helium-neon laser light. The second group received coherent, non-polarized helium-neon laser light. The third group was treated with polarized light of a low degree of coherence. The lesions of the first group had completely healed after the fourth session. The second group had not healed completely, but showed greater progress than the third group by the fourth treatment.

Pontinen, et al., found that laser therapy at 633 and 670 nanometers caused vasodilation and increased circulation in the scalp, while non-coherent LED light at 660 nanometers decreased blood flow for 30 minutes after irradiation.

Rochkind, et al., found that in treating crushed peripheral nerves, helium-neon lasers had the greatest effect. Infrared laser light (830 nanometers) was next; incoherent light at 660 nanometers was somewhat effective, but was completely ineffective at 880 and 950 nanometers.

Rosner, et al., found that laser treatment could delay degeneration of the optical nerve after trauma in rats, but non-coherent infrared light did not.

Paolini, et al., divided 99 patients with shoulder tendonitis into three treatment groups: helium-neon laser, 660 nanometer LED, and anti-inflammatory medication. Twenty-five treatments were given to both laser and LED groups. The laser group's results were the best: better than the medication group's outcome and much better than the outcome for the LED group.

Simunovic and Trobonjaca compared laser therapy at 830 nanometers with broadband, visible incoherent polarized light (VIP) for tennis elbow. Forty percent of the laser patients recovered completely; none of the VIP patients did.4

Commentary If light-emitting diodes were as effective as therapeutic lasers, they would already have replaced lasers in the clinic. After all, LEDs are less expensive to produce. Researchers and clinicians clearly prefer lasers. The library of laser therapy-related books, studies and articles is steadily expanding, whereas interest in (and supporting literature for) LEDs seems to be languishing.

Laser therapy is well accepted throughout Europe and Asia and is now becoming popular in North America. Associations for laser therapy are established in all of these regions, and conferences are well attended. A search on Google for LED (light-emitting diode) associations or organizations turned up nothing.

In the minds of most practitioners who use lasers, there is very little controversy as to which device to choose. It's not that LEDs don't work. They do. It's just that according to studies, lasers work better. Although the literature does support the use of LEDs in wounds, scars and other superficial applications, even in those instances, studies suggest that lasers are likely to provide better results. The single instance in which I believe LEDs offer a real advantage would be in the treatment of wounds, keloids or hypertrophic scars that are sensitive to laser light.

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Lasers and light sources are thought to work by targeting the bacterium responsible for causing acne, Propionibacterium acnes, which contains a light-absorbing molecule known as porphyrin. This bacterium can absorb various lasers and light, which cause the bacterium to burst and become destroyed - leading to an improvement in the condition' 'In addition, studies also show that lasers and light work by destroying and shrinking the oil glands where the acne bacteria live. By altering the structure of the skin where bacteria live, less oil is produced, leading to an improvement in acne symptoms.'

http://www.aad.org/media/background/news/cosmetic_2008_02_03_laser.html

Effects of 630-, 660-, 810-, and 905-nm laser irradiation delivering radiant exposure of 1-50 J/cm2 on three species of bacteria in vitro. Nussbaum EL, Lilge L, Mazzulli T. Rehabilitation Services, Mount Sinai Hospital and Department of Physical Therapy, University of Toronto, Toronto, Ontario, Canada. e.nussbaum@utoronto.ca OBJECTIVE: To examine the effects of low-intensity laser therapy (LILT) on bacterial growth in vitro. BACKGROUND DATA: LILT is undergoing investigation as a treatment for accelerating healing of open wounds. The potential of coincident effects on wound bacteria has received little attention. Increased bacterial proliferation could further delay recovery; conversely inhibition could be beneficial. MATERIALS AND METHODS: Pseudomonas aeruginosa, Escherichia coli, and Staphylococcus aureus were plated on agar and then irradiated with wavelengths of 630, 660, 810, and 905 nm (0.015 W/cm(2)) and radiant exposures of 1-50 J/cm(2). In addition, E. coli was irradiated with 810 nm at an irradiance of 0.03 W/cm(2) (1-50 J/cm(2)). Cells were counted after 20 h of incubation post LILT. Repeated measures ANOVA and Tukey adjusted post hoc tests were used for analysis. RESULTS: There were interactions between wavelength and species (p = 0.0001) and between wavelength and radiant exposure (p = 0.007) in the overall effects on bacterial growth; therefore, individual wavelengths were analyzed. Over all types of bacteria, there were overall growth effects using 810- and 630-nm lasers, with species differences at 630 nm. Effects occurred at low radiant exposures (1- 20 J/cm2. Overall effects were marginal using 660 nm and negative at 905 nm. Inhibition of P. aeruginosa followed irradiation using 810 nm at 5 J/cm(2) (-23%; p = 0.02). Irradiation using 630 nm at 1 J/cm(2) inhibited P. aeruginosa and E. coli (-27%). Irradiation using 810 nm (0.015 W/cm(2)) increased E. coli growth, but with increased irradiance (0.03 W/cm(2)) the growth was significant (p = 0.04), reaching 30% at 20 J/cm(2) (p = 0.01). S. aureus growth increased 27% following 905-nm irradiation at 50 J/cm(2). CONCLUSION: LILT applied to wounds, delivering commonly used wavelengths and radiant exposures in the range of 1-20 J/cm(2), could produce changes in bacterial growth of considerable importance for wound healing. A wavelength of 630 nm appeared to be most commonly associated with bacterial inhibition. The findings of this study might be useful as a basis for selecting LILT for infected wounds.

Laser Light Therapy and Wound Healing A brief review of literature reveals amazing effects of LLLT on wound healing. A study in Brussels, Belgium studied the influence of LLLT on the proliferation of fibroblasts and on the lymphatic regeneration. Four parameters were studied (Adhesion, local edema, regeneration of the vein and regeneration of the lymph vessel), with the following results: The adhesion of the scar with the under laying tissues disappeared after 10 days in the control group and after 4 days in the experimental group, a 60% improvement with LLLT therapy. The local edema disappeared in the test group after 8 days, while in the control group it lasted until 10 days, a 20% improvement. A considerable acceleration of the regeneration of both vein and lymph vessel was also seen in the test group.2 In another study, the mean time required for complete closure of a sutured wound in the control group was 7 days while irradiated test wounds took only 5 days to heal. The mean breaking strength, as measured by the ability of the wound to resist rupture against force, was found to be significantly increased in the test group. Early neovascularization, epithelization, increased fibroblastic reaction, and leucocytic infiltration were seen in the laser-irradiated wounds.3 Wound healing on animals and humans with use of low level laser therapy following sport and traffic accident injuries resulted in a 25-35% acceleration of healing on 74 patients over control group.4

800nm to 1000nm, have the least absorption rate frequency by the skin. This allows for deeper penetration of light but it is less-absorbable and does not stimulate the physiology of the body as well as the visible red, 635nm wavelengths. Even though the 635nm wavelength has less body penetration it still has been found to stimulate proper oxygenation, detoxification of the cell, DNA replication, and regeneration of damaged nerve tissue more efficiently than other wavelengths

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The brightness of light is measured in Watts of power. If you have a 100-Watt light bulb it will produce a brighter, hotter light than a 50-Watt light bulb. The brightness and heat of lasers are also measured in watts, however, low-level lasers are far below 1 Watt therefore measured in Milliwatts (mW) of power. One mW is 1/1000 Watt. LLLT is sometimes referred to as cold laser, which means that the level of energy will not significantly raise the temperature of the skin or internal tissues when exposed to the light, no matter how long the exposure period. Their power is important since it has been discovered that raising the temperature in the tissue can have many adverse effects on the healing process. The class IIIa laser is considered a Low Level or cold laser and must be under 5mW in power.

http://lazrpulsr.com/pdf/White_Paper_3_3_05.pdf

http://lazrpulsr.com/pdf/White_Paper_3_3_05.pdf

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Here's a good article which explains why most of the LLLT studies that didn't find much in results were due to too few joules http://www.laser.nu/llll/LLLT_critic_on_critics.htm

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... Here is some information regarding the possible synergy relationship of magnesium and LLLT. Keep in mind there are many other reasons why magnesium should help with MPB but here's the synergy I was referring to

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"Magnesium (Mg) is an intracellular cation. It is an essential element which catalyses more than 300 enzymatic reactions, in particular those involving ATP."

http://www.ncbi.nlm.nih.gov/pubmed/9529585?dopt=Abstract

"ATP requires magnesium in order to be stable. Without magnesium, ATP would easily break down into other components, ADP and inorganic phosphate."

Magnesium deficiency promotes excessive muscle tension"

" a magnesium deficiency appears to create resistance to insulin, Insulin resistance increases levels of insulin, which may result in a form of diabetes"

"Magnesium also appears to be able to also affect the nervous system by regulating the release of hormones"

http://web.mit.edu/london/www/magnesium.html

"Magnesium is at the center of life's ability to absorb light and change its electromagnetic energy into organic chemical energy."

".... The result is that with low magnesium levels the mitochondria gradually calcify and energy production decreases"

http://www.life-enthusiast.com/twilight/research_magnesiumchloride.htm

"Both of the cytochrome enzymes, Cytochrome c Oxydase and Nitric Oxide Synthase (NOS) have been found to be particularly reactive to laser photon stimulation. The particular affinity of these and other photo-reactive enzymes to accelerate their functions in the presence of LLLT provides critical increases in ATP and NO which enhances cellular metabolism, circulatory improvement and nerve function."

"ATP production and synthesis are significantly enhanced, contributing to cellular repair, reproduction and functional ability. Laser stimulation of Cytochrome c Oxydase, a chromophore found on the mitochondria of cells, plays a major role in this rapid increase in production and synthesis of ATP."

http://laserthera.com/how_does_lllt_work.htm

"Anything able to compromise ATP production in mitochondria could harm or even kill cells and so cause tissues to malfunction and symptoms to develop."

"Anything that increases the production of ATP energy will speed healing and improve symptoms"

http://www.todayschiropractic.com/issues/archives/may_jun_05/feat_001.html

"The main and the most important effect of laser light on cells is the accelerated production of the ATP (Adenosine TriPhosphate). ATP molecules are found in the cells of all living things. In animal and human systems, Adenosine TriPhosphate is synthesised in small cellular organelles called mitochondria. In the mitochondria, the primary cellular energy source - the ATP - is produced by combining oxygen with sugar derived from food.

ATP can be described as the 'energy carrier' or the 'energy shuttle' capable of harnessing the chemical energy generated from the breakdown of the foodstuffs and transporting it across cellular membranes for conversion into 'fuel' that is required for normal body functioning. Adenosine TriPhosphate is often referred to as the 'energy currency of life'.

If a person has insufficient levels of ATP available, the energy cannot reach the tissues. This can lead to a variety of health problems, such as a susceptibility to infectious diseases, poor wound healing, inflammation and swellings.

In short - the low level laser therapy devices (soft lasers or cold lasers) deliver light into living tissues (this process is also referred to as 'phototherapy'), increasing the ATP and shuttling more energy and nutrients around the body for healthy metabolism and the appropriate functioning of organs."

http://www.emeraldcoastlipolaser.com/images/info/info-1.pdf

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[Ignore]

Research has shown that low level laser therapy can increase cellular ATP (body fuel) by as much as 150%.

This new fuel is then available to carry out the many repair and regenerative functions of our cells. In essence, there is more energy to expel waste products, and replace nutrients and proteins, the building blocks of our cells. LLLT increases lymphatic drainage by doubling the size of the lymphatic drainage ducts. This allows easier movement of cellular waste products and older protein by-products of cellular metabolism or tissue injury. The result is a rapid reduction in fluid retention, swelling, and inflammation. The increased collagen and epithelial production is also accompanied by the production of new capillaries and an increase in the density of the capillary bed. There is a rapid formation of many proteins, including collagen, a clear sticky substance, which is nature's "repair" material. This newly formed collagen can then be used to regenerate tissue that once had been damaged.

Osmosis states that no nutrient can transfer across the depolarized membrane of an injured cell. One of the most important functions of low level laser therapy is to re-polarize sick and injured cellular membranes. This allows for essential nutrients to transfer from the blood into the cell. In summary, the photons produced by laser light normalise tissue by activating enzymes within cells, which triggers a chemical reaction in which more enzymes are activated in a domino-type effect. Low level laser therapy has no effect on normal tissue. Photons are only taken up by cells that need them.

However, caution should be used not to overuse low level laser light. Overstimulation, whilst not having the potential to cause harm, can undo the good that the correct dose would have achieved. Excessive biostimulation is not beneficial.

Eighty to 90 percent of the U.S. population is magnesium deficient.he higher the protein you consumer the more magnesium is needed. When large amounts of calcium are consumed, you need more magnesium.

Rabbits just can't take a high-cholesterol diet. Their blood fat level goes up, and they get severe arteriosclerosis/atherosclerosis. However, if you feed them five times the recommended daily allowance of magnesium, their cholesterol goes down and they don't get arteriosclerosis.

Magnesium is a very important ingredient of the green coloring matter in plants (chlorophyll). Magnesium helps in the use of fat in the diet. In many cases of individuals suffering from irritability, the blood has shown low values for magnesium.

Normal development apparently depends on the presence of magnesium. Approximately 70 percent of the magnesium in the body is found in the skeletal system. At least half of the magnesium in the body is combined with calcium and phosphorus in the bones. The remainder is in the muscles, red blood cells and the other tissues of the body.

Magnesium ensures the strength and firmness of the bones, and it makes the teeth harder. Adequate intake of magnesium counteracts acidity, poor circulation and glandular disorders. Children with magnesium deficiency are very often mentally backward.

Without enough "biologically available" magnesium, the cellular calcium pump slows down. Thus a vicious cycle is established. The low levels of available magnesium inhibit the generation of energy, and the low levels of energy inhibit the calcium pump.

The end result? The mitochondrion, the powerhouse of the cell and the entire body, becomes calcified. This is the beginning of aging. It all starts in the cell. First the cells age. This leads to organ aging. And after the organs age, individual aging occurs. Since calcium is readily accumulated by mitochondria, this ion is potentially capable of antagonizing the activating influence of magnesium on many intramitochondrial enzyme reactions."

Far Infrared Ray (FIR) or Heat Therapy is also useful to prevent, combat and kill cancerous cells. Far Infrared Ray are waves of energy, totally invisible to the aked eye, capable of penetrating deep into the human body, where they gently elevate the body's surface temperature and activate major bodily functions. Far Infrared promotes the killing of many pathogenic (disease causing) bacteria, viruses, fungi and parasites.

Far Infrared relieves nervous tension and relaxes autoneuro muscles thereby helping the body make the most of its intended healing abilities. FIR reduces soreness on nerve endings and muscle spasms, as muscle fibers are heated. Far Infrared strengthens the Immune System by stimulating increased production of white blood cells (leukocytes) by the bone marrow and killer T-cells by the thymus.

Far Infrared expands capillaries which stimulates increased blood flow, regeneration, circulation and oxygenation.

Sun therapy is a form of natural FIR thermal therapy. Far Infrared Ray are the invisible rays of natural sunlight that have the longest wavelength. The cancerous cell has a weakness, heat. It will die if the temperature goes above 42C/107.6 F. Far Infrared treatment raises body temperature to 42 degrees C. Far Infrared heat penetrates through the body and can kill existing cancerous cells. Far Infrared heat enables capillaries to expand, thus enabling good circulation and combating the existence of cancer cells.

Now we find new evidence that and this is important when you consider that cancer is a late stage fungal infection or is almost always accompanied by one. A newly discovered mechanism by which an infectious fungus perceives light also plays an important role in its virulence, according to Howard Hughes Medical Institute investigators at Duke University Medical Center. The findings suggest that changes in light following fungal invasion of the human body may be an important and previously overlooked cue that sparks infection, the researchers said. "The discovery in the human pathogen Cryptococcus neoformans further suggests that light therapy, in combination with anti-fungal drug treatments, might offer an effective method to combat a variety of fungal infections, particularly those of the skin or nails," said HHMI investigator Dr. Joseph Heitman and Dr. James B. Duke professors of molecular genetics and microbiology and medicine at Duke.

"The genes required for light sensing, while not essential for virulence, do contribute to the rapidity with which the fungus causes lethal infection in the mammalian host," Heitman said. "It is therefore conceivable that light could be used as a therapy for fungal infections, particularly infections at the body surface, such as those of skin or nails." Laser therapy might also be possible for certain fungal sinus infections, he added.

Dr. Damien Downing, in his book Daylight Robbery..4 says Russian scientists have showed that animals exposed to the correct doses of sunlight were capable of clearing a wide range of toxins out of their system considerably quicker than animals reared away from the sun. The toxins that they studied included quartz and coal dusts, toxic minerals such as lead, cadmium and mercury, liver poisons such as carbon tetrachloride, and the neurotoxins which these days are so heavily used worldwide as pesticides. They found that sunlight speeded up the clearance of toxins from the body twice to as much as twenty times. The best effect was obtained when sunlight exposure had started some time before exposure to the toxin.

Twenty-five years ago Dr John Ott investigated the background to a report that children at a school in Illinois had five times the national rate of leukemia..3 He found that all the pupils who developed leukemia had been in two particular classrooms. In these two rooms the teachers always kept the large curtains completely drawn across the windows to reduce glare and distraction, and to keep the children's attention on schoolwork. The indoor lighting was therefore on all the time, and this was 'warm white' fluorescent. We know that vitamin D is protective against cancer. But the sun is not recommended by oncologists. Sunlight in large doses for long periods may cause skin cancer but sunlight at rational dose levels protects from cancers and is more than useful in any cancer treatment protocol.

Researchers at the Medical College of Georgia say that their blue-violet light produces free radicals that damage cell growth and increases cell death. "One desirable feature we've observed with the blue light is that non-cancerous cells appear unaffected at light doses that kill tumor cells," says Dr. Jill Lewis..2

Magnesium is at the center of life's ability to absorb light and change its electromagnetic energy into organic chemical energy.

Cancer patients need light. According to a scientific article in "Health & Diet Times" (June/July 1982 issue) written by Lee de Vries, MD, cancer cells self-destruct within minutes after exposure to strong intense light. What happens is that the cancerous PLANT cell changes its formaldehyde into a plant sugar molecule giving off oxygen-ozone in the process and it is this element combination of O2 and O3 which causes the disintegration of the cancer cell.

Cancer patients need light and they need magnesium.

Low-level laser therapy, also termed photo-biostimulation, is simply defined as light exciting or activating cells. The photons (light as it travels in bundles) from most low-energy laser devices can penetrate deep into tissue, about 3 inches, without causing heat or tissue damage. Once inside the cell, the photons comprising the laser beam can trigger many cellular changes such as the production of enzymes, protein substances vital for innumerable bio-chemical actions.

Laser light also stimulates the cells' mitochondria. Mitochondria are tiny biochemical engines that produce enzymes essential for cell function. In short, low-level laser therapy appears to heal at a cellular level. It's like

shining a ray of sunlight directly on injured cells inside the body and stimulating the cells to return to normal function. Nearly 2000 different investigations from over eighty countries on the effect of Low Level Laser Therapy (LLLT) on humans and animals have been published in the medical literature.

Sunlight dominates the chemistry of the blood. People who do not get sunlight do not have the same richness and redness of blood as do those who secure plenty of sunlight. There is not a tissue nor a function in the body that is not benefited by regular and judicious sun-bathing. - Herbert M. Shelton, Fasting and Sun Bathing

Dr. Heinrich Kremer sees the origin of cancer differently than the mainstream. He terms his new theory Cell Dyssmybiosis. According to Kremer cancerous cells do not originate from DNA mutations, but from a functional process that occurs in the mitochondrion (a cell organelle or "organ of the cell" if you will). The mitochondrion makes energy for the body in the form of ATP. We need lots of ATP to keep living. What is really interesting is the role of electromagnetic energy (light) in the process. It appears that the complex matrix of reactions that make ATP, absorb light.

Dr. Damien Downing, in his book Daylight Robbery..4 says Russian scientists have showed that animals exposed to the correct doses of sunlight were capable of clearing a wide range of toxins out of their system considerably quicker than animals reared away from the sun. The toxins that they studied included quartz and coal dusts, toxic minerals such as lead, cadmium and mercury, liver poisons such as carbon tetrachloride, and the neurotoxins which these days are so heavily used worldwide as pesticides. They found that sunlight speeded up the clearance of toxins from the body twice to as much as twenty times. The best effect was obtained when sunlight exposure had started some time before exposure to the toxin.

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Dermatology. 2009 Apr 29. Seasonality of Hair Shedding in Healthy Women Complaining of Hair Loss. Kunz M, Seifert B, Trüeb RM.

Department of Dermatology, University Hospital of Zürich, Zürich, Switzerland.

Background: A number of otherwise healthy women with or without clinical alopecia complain of recurrent hair loss, presumably reflecting seasonality in the growth and shedding of hair. Objective: To test the hypothesis that periodicity in hair shedding reflects seasonal changes in human hair growth. Methods: Retrospective case study over a period of 6 years of apparently healthy women with the complaint of hair loss. All underwent biochemical investigations, and trichograms were made. Results: After exclusion of patients with a disease or on drugs known to cause hair loss, 823 women remained. Analysis of trichograms demonstrated annual periodicity in the growth and shedding of hair, manifested by a maximal proportion of telogen hairs in summer. A second peak seems to exist, though it is less pronounced, in spring. The telogen rates were lowest in late winter. Conclusions: These results confirm the findings of former authors who have indicated seasonal changes in human hair growth, though this is the first study performed systematically in a representative number of women. Copyright © 2009 S. Karger AG, Basel.

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Light Therapy: Making the Right Choice in Laser Therapy (Part 1)

Making the right choice of laser for your light therapy can be extremely confusing because the literature available on light therapy is not only confusing but contradictory (Basford, 1993). Laser light has unique physical properties that no other light source or LED has. There is a big difference between a colorful brochure and the clinical efficacy of the unit being sold. To date, laser instruments have been sold which do not even contain a laser. To help you make the right choice, this article defines the common terms used in light therapy and presents the biological basis of the unique clinical efficacy of Low Level LASER Therapy.

The word LASER is an acronym for Light Amplification by Stimulated Emission of Radiation. Scientists recognize lasers by two parameters. Laser light is coherent (single wavelength) and collimated (focused). Coherent light means waves of the light quanta or photons are synchronous and move in the phase with each other. By collimating or focusing a specific wavelength of light, energy can broadcast great distances and remain a focused dot of energy. Advertised light therapy units such as the LED, CO2 and infrared or near-infrared lasers, are in general, not collimated. Removing the collimator from a laser will cause the light array to look just like an LED or any other colored light, but the biological and clinical effects are not the same. Laser light is the only source of coherent and collimated light. This underlies the biological basis of light therapy.

While there is no legal definition for "Low-Level Laser Therapy (LLLT), most scientists and clinicians agree that Low-Level means that the power output (2 to 5 mW) is low enough not to raise the temperature of the tissue being irradiated by more than 1 degree Celsius (Turner and Hode 1999). The FDA classifies lasers with this power output as a Class IIIa laser. Any potential danger from a Class IIIa laser results from direct irradiation of the eyes. Thermal damage is not possible. Class IIIa lasers allow LASERS to be used as therapeutic tools to, "... relieve pain and suffering and above all else, DO NO HARM..."

In marked contrast, the highly advertised, High-Power infrared (IR), or nearinfrared lasers (NIR), classified by the FDA as Class IIIb-IV, have power outputs much greater than 10 mW. Higher-output power can induce marked elevations in tissue temperature (e.g., 110 mW, 2.45 C: 142 mW, 4.74 C, Gurevich, Filonenko, and Salansky, 1994). While High-Power lasers can produce symptomatic pain relief, the mechanism of action involves thermal ablation of tissue, including neuron receptors, cell membranes, and intracellular proteins. (Karu, 998, 2002). While symptomatically effective for short durations, these lasers are not therapeutic and potentially dangerous for both operator and patient.

Low-level light therapy works by stimulating a cell's innate metabolism. Again, the effects are biochemical, not thermal, and therefore cannot damage living cells (Karu, 1998, 1999, 2002). The therapeutic effects of LLLT result from biomodulation of a tissue. Low-Level Laser Therapy is safe for both operator and patient. LLLT lasers are therapeutic because they allow living tissue to maintain or return to homeostasis without damaging tissue (Karu, 1998).

Biomodulation is defined as changing the natural biochemical response of a cell Page 1 or tissue within the normal range of its function. LLLT acts as a trigger to turn on or off the cell's own metabolic processes in response to a stimulus. Light energy, or quanta, triggers some change in cellular metabolism. Biomodulation resulting from exposure to light energy or photon transfer is termed photobiomodulation, the effects of which are biochemical, not thermal.

Photobiomodulation results from transfer of energy from a photon to a photon acceptor on the cell, mitochondrial, or nuclear membrane or to some intracellular protein. Photon acceptors found within biological tissue are called chromophores. Chromophore literally means "lover of color". Biological chromophores are pigmented (colored) substances such as amino acids, nucleic acids, mitochondrial enzymes, hemoglobin, melanin, serotonin, retinal rodopsin, etc., and are found throughout living tissue.

Four distinct biological effects occur when using LLLT, i.e., when photon energy is transferred to a biological chromophore. These include: 1. Growth factor production occurs within cells and tissue in response to increased ATP and protein synthesis. This initiates mitosis, cell proliferation by changing the cell, mitochondrial, or nuclear membranes permeability to monovalent (Na+, K+) and divalent (Ca++, Mg++) ions (Karu 1987, 1998, 2002).

2. Pain relief results from suppression of the nociceptor response mediated by increased serotonin and endorphin release (Sumano et al., 1987a, 1987b).

3. Immune-modulation and mitigation of the inflammatory response occur because the mononuclear phagocytic cells, mast cells, and leukocytes are stabilized preventing the release of harmful inflammatory mediators (Amano 1994). In addition, vasodilatation and increased microcirculation allows a rapid return to homeostasis and promotes first intention healing (Sumano 1987a, 1987b; Fiszerman and Rozenbom 1995).

4. Direct trigger point stimulation allows direct release of endorphins and other endogenous pain mediators such as serotonin, VIP, substance P, prostaglandins, etc. (Kaada, B and Eielson O, 1983, Kaada, Olsen and Eielson,1985).

Propagation of light though tissue is regulated by reflection, penetration, or absorption and transfer of energy of light quanta to the cell. This is laser dependent. Reflected energy becomes scatter radiation and is dangerous to both operator and patient. This is a natural in vivo protection mechanism. The body could never control its internal environment, temperature, and therefore cellular metabolism if all exposed photon energy was transferred to the tissue. The majority of energy from uncollimated and noncoherent light sources is reflected off the skin surface. Most infrared light sources are uncollimated or noncoherent, or both, and depend on scatter or reflection to reduce the thermal damage due to irradiation. Therefore, very little photon energy is transferred to the tissue. Biomodulation does not occur.

As advertised, photon energy from high-power infrared lasers penetrates deep into the tissue. Again, this is a physical and thermal phenomenon, not a therapeutic phenomenon. Energy is dissipated as heat. Thermal activation overrides the cells homeostatic metabolic state. The cell may be turned on or off but not in a functional manner. This can cause damage deep in tissues, out of sight of the clinician. Furthermore, energy transfer to a biological chromophore does not occur. When light quanta are absorbed, energy is transferred to water, some organic molecule, or to one or more chromophores within tissue. Biomodulation occurs because the absorbed photon changes the energy state of an electron (mitochondrial Page 2 electron transport chain), donates an electron to a re-dox molecule (Cytochrome oxidase, hemoglobin, melanin, serotonin, porphorin ring, amino acid, nucleic acid etc.,), or ionizes a chemical bond (ion or protein channel on the cell, mitochondrial or nuclear membrane) thereby producing a cellular response which changes the cell's homeostatic set point .

Within the cell, the signal is transduced and amplified by a photon acceptor (chromophore). When a chromophore first absorbs light, electronically excited states are stimulated, primary molecular processes are initiated which lead to measurable biological effects. These photobiological effects are mediated through a secondary biochemical reaction, photosignal transduction cascade, or intracellular signaling which amplifies the biological response.

The ionizing effects of LLLT allow photon acceptors to accept an electron. This turns on the oxidation-reduction cycle of the stimulated chromophores such as Cytochrome oxidase, hemoglobin, melanin, and serotonin. Changing the re-dox state of the chromophore changes the biological activity of that chromophore e.g., hemoglobin changes its oxygen carrying capacity. This is in contrast to the destructive ionizing effect of x-rays, which remove or disrupt electrons from an atom or molecule and damages tissue.

When photon energy breaks a chemical bond, changes occur in the allosteric proteins in cell membranes (cell, mitochondrial, nuclear) and monovalent and divalent fluxes activate cell metabolism and intracellular enzymes directly. Direct activation of cell membranes alters ion fluxes, particularly calcium, across that membrane. Changes in intracellular calcium alter the concentrations of cyclic nucleotides, causing an increase in DNA, RNA, and protein synthesis, which stimulate mitosis and cellular proliferation. When all of the above occurs correctly, the photon activates a chromophore and that single enzyme molecule rapidly catalyzes thousands of other chemical similar to the well known, calcium regulated, 2nd messenger cAMP cascade. This biological amplification process explains how low-power laser therapy can produce such profound systemic, cellular, and clinical effects.

One of the most confusing aspects of light therapy is dozens of published reports, which fail to find any effect from LLLT. As with any treatment, clinical efficacy depends on diagnosis, dosage, treatment technique and individual reaction. Similarly, each stage of the biomodulation cascade depends on additional laser specific factors including the light source, wavelength, irradiation dose, power density, and tissue specific factors including target chromophores and the functional metabolic state and composition of the irradiated tissue. Alterations in any of these parameters can minimize or cancel the effects of light therapy. Here are some basic examples:

Light sources: A cell's response to light differs markedly in vivo and in vitro. The coherent properties of laser light are not important in cell suspensions or tissue culture monolayers. In vitro, coherent or noncoherent light (both lasers and LED's) with the same wavelength, intensity, and dose, can stimulate the same biological response. However, In vivo, in living tissue, only photons of coherent light are able to pass through optical windows in cell membranes to become accepted by photon acceptors (chromophores).

Coherent light is only created by a LASER light source, not from LED or SLD light Page 3 sources. Even coherent light, if left uncollimated, will for the most part, reflect off the skin as dangerous scatter radiation. Coherent, collimated, laser light has, by far, has the greatest therapeutic potential. Because laser light triggers the cells own homeostatic mechanism, only low intensities and doses are required for dramatic biological responses. Wavelengths: Every chromophore has an absorption coefficient for peak activation, which is wavelength specific. However, each chromophore has a wide range of wavelengths in which it will accept or donate electrons. Within living tissue, peak activation of a chromophore can occur within a broad range of wavelengths (e.g., oxygenated hemoglobin has absorption peaks at 420 and 577 nm; reduced hemoglobin at 560nm). Wavelengths longer than 1200 nm (infrared) and shorter than 200 nm (ultraviolet) are absorbed by inter- and intracellular water.

Wavelengths of 620-720 nm are typically better able to penetrate optical windows in cellular membranes because their photons are not easily absorbed by living tissue, which on average, are composed of 70-80% water. Chromophores found in eukaryotic (mammalian) tissue have peak activation spectra between 600 nm to 720 nm. Since laser light acts as a trigger for normal cellular metabolism, it is not necessary to utilize a wavelength that strikes the peak activation of each chromophore. It is only necessary for the wavelength to fall within the spectra of the chromophore. The wavelength of 635 nm is contained within the spectra of the chromophores found in mammalian tissue and therefore has the potential to biomodulate all eukaryotic tissue.

Irradiation Dose: The product of power density (mW) and exposure time defines the irradiation dose and is measured in Jules of energy per square centimeter (J/cm2). This is an extremely important parameter for laser treatment and biomodulation. Scientists have shown the therapeutic efficacy of LLLT is enhanced by repetitive low doses within a specific time in contrast to the same total dose in a single treatment (Abergel, et. al., 1984). In addition, the biomodulation effects of LLLT are cumulative. Repeated doses within relatively short intervals produce greater biological responses than single frequency lasers (Mester, Mester, Mester, 1985). Doses, which are too low, produce no effect. Doses, which are too high, produce no effect or dampen biological activity (Kana et. al., 1981). Each biological tissue has an optimal dose, which is laser dependent [e.g., skin: 1 J/cm2 – HeNe laser (Mester, 1986); Fibroblast: < 1 J/cm2 – GaAs laser (Abergel et. al., 1984); Trigger point doses: 0.1 J/AP-point regardless of laser type (Karu, 1988)].

Power density from 2 to 5 mW is adequate to activate mammalian chromophores. Power higher than 5 mW may exceed the activation levels of some chromophores. The greatest biomodulation is created with repeated doses of pulsed collimated laser light at or around 5 mW of power.

Chromophore response is dependent upon the functional metabolic state and composition of the tissue at the time of irradiation. LLLT produces separate responses in separate tissue based on the active chromophore within that tissue, e.g. bronchial tissue (mast cells), skin (melanin). Healthy, injured, and malignant tissues absorb light, or transfer energy differently because they contain different chromophores, and are in different metabolic states. This explains the wide array of therapeutic effects of the LLLT in damaged tissue and the lack of response in healthy tissue.

The most dramatic examples include the different effects of LLLT irradiation on healthy tissue, inflamed tissue, and malignant tissue. Healthy tissue does not contain a Page 4 high concentration of biologically active chromophores (e.g., biogenic amine, histamine, serotonin, VIP, substance P) while inflamed tissue does. LLLT can mitigate the inflammatory response by stabilizing mononuclear phagocytic cells, stimulating leukocyte chemotaxis, and preventing mast cell degranulation. This prevents the release of histamine, and other biogenic amines, which cause the cellular infiltration responsible for the four cardinal signs of inflammation: redness, heat, pain, and swelling. LLLT dampens the inflammatory cascade, mitigates inflammation, and allows first intention healing. Similarly, malignant tissue is defined by its high mitotic index, which supports the rapid, uncontrolled growth of cancer. Mitotic cells appear insensitive to LLLT irradiation while injured and dormant cells can be stimulated to divide.

While LLLT may have no effect on a healthy, normal cell, it has profound biological and therapeutic effects on inactive, sick or injured cells. The power of LLLT lies in the fact that injured cells respond to irradiation, turning on or off, allowing the cell to return to, or maintain, cellular homeostasis. In short, LLLT allows the cell to heal itself.

In conclusion, for safe and effective light therapy, the ideal therapy device should be a low powered (between 2 and 5 mW), laser (capable of producing collimated and coherent light), which produces wavelength between 600 than 720 nm, and is capable of rapidly delivering pulsed frequencies to tissue.

http://www.lazrpulsr.com/pdf/Article17505.pdf Our next article will cover frequency biomodulation, the key to changing today's standard laser into tomorrow's advanced therapeutic laser instrument.

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JDP70 - With the graph of amount of light transmitted threw tendon is very interesting showing the alochol causes much better absorbtion.

Now when it comes to treating a scar or muscle/tendon damage. What liquid do you propose I put on the skin to help it absorb better?

ALso do you think if treating wrinkles similar should be done to?

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"Our Body is made up of approximately five trillion individual cells. Each cell must supply its own vital energy called ATP (adenosine triphosphate). Every job a cell must perform needs to be done with the aid of ATP. Light is the only medication that can directly increase the production of ATP. Our cell power plant, the Mitochondria, converts photon energy (light energy) into ATP (cell energy), when there is a deficiency. Research has shown that low level laser therapy can increase cellular ATP (body fuel) by as much as 150%.

This new fuel is then available to carry out the many repair and regenerative functions of our cells. In essence, there is more energy to expel waste products, and replace nutrients and proteins, the building blocks of our cells. LLLT increases lymphatic drainage by doubling the size of the lymphatic drainage ducts. This allows easier movement of cellular waste products and older protein by-products of cellular metabolism or tissue injury. The result is a rapid reduction in fluid retention, swelling, and inflammation. The increased collagen and epithelial production is also accompanied by the production of new capillaries and an increase in the density of the capillary bed. There is a rapid formation of many proteins, including collagen, a clear sticky substance, which is nature's "repair" material. This newly formed collagen can then be used to regenerate tissue that once had been damaged.

The laser energy also changes the electrical potential across cell membranes. This causes a desensitization of nerve cells, which results in the reduction of pain impulses.

Osmosis states that no nutrient can transfer across the depolarized membrane of an injured cell. One of the

most important functions of low level laser therapy is to re-polarize sick and injured cellular membranes. This allows for essential nutrients to transfer from the blood into the cell.

In summary, the photons produced by laser light normalise tissue by activating enzymes within cells, which triggers a chemical reaction in which more enzymes are activated in a domino-type effect. Low level laser therapy has no effect on normal tissue. Photons are only taken up by cells that need them. How much light?

However, caution should be used not to overuse low level laser light. Overstimulation, whilst not having the potential to cause harm, can undo the good that the correct dose would have achieved. Excessive biostimulation is not beneficial. Kinesiology, or muscle testing, is an excellent way of determining how much the body requires. Another way, if pain is involved, is to note improvement in pain level as a guide to dosage.

SUMMARY OF HEALING EFFECTS

Light bio-stimulation influences functions in the following ways:

• Acceleration of the inflammatory stages, to achieve quicker healing - bursitis, tendonitis, arthritis,

• the general healing of wounds and injuries – diabetic ulcers, venous ulcers, bed sores, mouth ulcers, fractures, tendon ruptures, ligamentous tear, torn cartilage etc.

• Pain control - low back pain, neck pain, pain associated with inflammatory conditions, Carpel Tunnel Syndrome, arthritis, tennis elbow, golfer's elbow, post herpetic neuralgia, muscle cramps etc.

• Stimulation of cellular replication (which is the key to healing and the production of healthy tissue)

• Increase of DNA and RNA synthesis

• Stimulation of collagen production (collagen is the main supportive protein of skin, tendon, bone, cartilage and connective tissue.) – excellent for beauty therapy, wrinkle management, acne

• Alteration of the immune system (helps immune cells combat infection)

• Stimulation of fibroblast activity (aids in the production of collagen)

• Enhancement of vascularisation (aids in improving circulation - poor circulation in diabetes, massage therapy, relaxation

• Stimulates the sodium potassium pumps in cell membranes which enables transport of essential nutrients into cells to allow healing.

"http://www.lightforhealth.co.uk/content/light-and-the-body.pdf

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INFO REGARDING LASER BLOOD IRRADIATION

"the improvement of rheological characteristics of the blood and microcirculation, normalization of parameters of hormonal, immune, reproductive and many other systems.

After blood irradiation the decrease of concentration of cholesterol, triglycerides, lipoproteins and glucose was also detected in patients with originally increased values. No signs for blood cell damage was obtained. The blue light blood irradiation therapy helped to keep the level of atherogenic lipids in the blood of patients with atherosclerosis relatively low for several months.

Activation of microcirculation is one of the most pronounced effects of IV LBI. The improvement of microcirculation after IV LBI was detected in all structures of the central nervous system.

It can improve the blood microcirculation, increase nutrients and oxygen supply to different tissues.

positive influence of the activity of immune system was found. All the above mentioned results was detected after a single procedure of blood irradiation, and repeating treatments made results of therapy stronger.

The decrease of low-density lipoproteins and cholesterol amount in the blood serum was detected.

It was proposed, that increasing levels of NO [nitric oxide]can be results of light irradiation of blue and red band."

http://www.emred.fi/htmls_en/laser_blood_irradiation_therapy_en.html#TLBI

"used for its biostimulative, analgetic, antiallergic, immunocorrective, antitoxic, vasodilative, antiarrhythmic, antibacterial, antihypoxic, spasmolytic, anti-inflammatory and some other properties

activates nonspecific mechanisms of anti-infectious immunity. Intensifying of bactericidal activity of serum of the blood and system of the complement, reduction of the degree of C - reactive protein, level of average molecules and toxicity of plasma, increasing the content of IgA, IgM and IgG in the serum of the blood, as well as decreasing of the level of circulating immune complexes are proved.

improving the rheological properties of blood, rising fluidity and activating transport functions. That is accompanied by increasing the oxygen level, as well as decreasing the carbon dioxide partial pressure.

It was proved that IV LBI reduces aggregation ability of thrombocytes, activates fibrinolysis, which results in peripheral blood flow velocity increasing and tissues oxygenation enriching. The improvement of microcirculation and utilisation of oxygen in tissues as a result of IV LBI is intimately linked with positive influence on metabolism: higher level of oxidation of energy-carrying molecules of glucose, pyruvate, and other substances.

unblocking of capillaries

positive influence practically on all tissues and functional systems of the body"

http://www.laserpartner.org/lasp/web/en/2003/0058.htm

"As shown in physiological and physiochemical tests, this laser irradiation technology can rapidly alter the flow conditions of blood and oxygen in the body. From increased micro-circulation, strengthened blood cells, increased cell metabolisms, increased immune system functions, and faster tissue regeneration this technology is very beneficial to the total functional parameters of the human body."

http://www.chinatech.com/irradiation.htm

more info thanks to hapyman

Some info from http://www.wanliyiliao.gz.cn/product.asp

Cardio-cerebral vascular disease laser therapeutic apparatus

Treatment principle

1. Human body optical window

Human tissue is mainly composed of water, hemoglobin and melanin. Theoretically, the laser wavelength which has the minimum thermal damage threshold to tissue is called the "optical window of human body".

The latest laser medicine researches showed that when 650nm laser beam irradiates the body vertically via body surface to radial artery, approximately 1/10 of laser power can penetrate skin , muscle and vessel wall and absorbed by blood.

The spectrum for blood fluorescence activated by laser is mainly between 600-670nm, and the spectrum of 630-650nm laser is located within peak values. So, it is not difficult to understand from the molecule fluorescence mechanism that the spectrum of the laser source activate blood from basic state into enabled state,and the spectrum within the range of 630 to 650nm gives the most effective or curative results.

2. Blood laser radiation decreases blood viscosity

Adopting the laser of 650nm to irradiate blood, the laser can be absorbed respectively by oxyhemoglobin and reduced hemoglobin strongly. Because red blood cells are the main part of the blood(taking up 95%), the hematocrit of red cell is the most important factor which influence blood viscosity, especially the viscosity in low shear rate. The metamorphism and orientation of erythrocyte during blood flow are the important factors which influence blood viscosity in high shear rate. With the absorption of the laser energy by blood, the lipid layer of the erythrocyte will be dissolved, as a result the erythrocyte ability for carrying electric charge will be recovered; further the specific volume and metamorphism of red blood cells and blood rheological property will be improved, then blood viscosity will be decreased; the blood supply to human body, especially the terminal

micro-circulation will have a corresponding improvement.

Abundant researches proved that 650nm laser irradiation to blood can decrease blood viscosity and improve erythrocyte metamorphism ability, especially can normalize cell surface electric charge, cell biological feature or function, normalize distribution of enzyme receptor on cell membrane and increase the membrane stability. Besides, it can also adjust the concentration and balance of thromboxane A2 (TXA2) and prostaglandin I2(PGI2), inhibit thrombocyte conglomeration and regulate blood vessel function. Thereby it can prevent and treat the ischemic cardio cerebral vascular diseases and it also can prevent from the occurrences of thrombosis diseases.

3. Laser irradiation can improve the capability of blood to carry oxygen.

Through laser radiation on blood, the lipoid layer which aggregated on the surface of red blood cell will be dissolved, thereby improve the permeability of red cell membrane. And the capability of the body to carry or use oxygen can be promoted remarkably, and then body oxygen supply will be improved very well.

4. Laser irradiation decreases cholesterol and triglycerides

Laser irradiation can correct the disorder of lipid metabolism rapidly and efficiently decrease the cholesterol and triglycerides to regular level. It also can normalize the lipid metabolism of the body.

Characteristics

Safe and no side effect:

SAS-XN cardio cerebral vascular laser therapeutic device adopts 650nm semi-conductor laser. It can penetrate skin, fattiness, muscle, vessel wall but won't hurt any tissue of the body and cell. The 650nm laser beam belongs to low energy laser, the radiation power of the laser is far smaller than the damage shreshold of the body organs and cell.

Moderator Commands:

6/27/2009 12:29 AM

jdp710 (207.200.116.72)
Regrowth.com Member

Registered: Apr 2008
Posts: 2,271
[Ignore]

"Power density from 2 to 5 mW is adequate to activate mammalian chromophores. Power higher than 5 mW may exceed the activation levels of some chromophores. The greatest biomodulation is created with repeated doses of pulsed collimated laser light at or around 5 mW of power."

http://www.lazrpulsr.com/pdf/Article17505.pdf

"a HeNe [632 nm] laser with a power output of 3.5 mW has a greatest active depth of 6-8 mm depending on the type of tissue involved. A HeNe laser with an output of 7 mW has a greatest active depth of 8-10 mm"

http://www.laser.nu/lllt/Faq1.htm#How%20deep%20into%20the%20tissue%20can

"As a gereral rule, optimal biostimulation is effected by the application of smaller dosages-per-point to more points at the treatment site.

Optimal bioinhibition is achieved through applying higher dosages-per-point, but to fewer treatment points."

http://www.spectramedics.com/llltinfo.htm

"Power density from 2 to 5 mW is adequate to activate mammalian chromophores. Power higher than 5 mW may exceed the activation levels of some chromophores. The greatest biomodulation is created with repeated doses of pulsed collimated laser light at or around 5 mW of power"

"In conclusion, for safe and effective light therapy, the ideal therapy device should be a low powered (between 2 and 5 mW)"

http://www.lazrpulsr.com/pdf/Article17505.pdf

So again, for best results you want low powered mW lasers "at or around 5 mW". Sure, you'll get results with higher powered lasers but from all the research I've come across best results = our 5 mW lasers.

With these quotes you may start to think that you'll just increase time during each treatment and do less treatments per week. What I mean is you may be inclined to do 30 minute sessions 2 times a week or so but this is not optimal. Here's a quote to back up what I mean.

". Scientists have shown the therapeutic efficacy of LLLT is enhanced by repetitive low doses within a specific time in contrast to the same total dose in a single treatment "

http://www.lazrpulsr.com/pdf/Article17505.pdf

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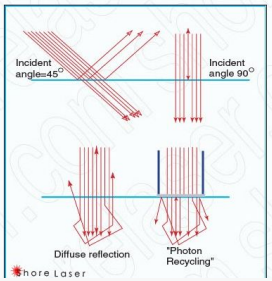
incident angle = less laser light absorbed (not contouring to scalp)

- When light passes through an interface of different refractive indices, for example, air (RI=1.0) and epidermis (RI= ~1.5), there will always be some *reflection and refraction of light*, which increases with increasing angle of incidence. Reflection and refraction can be minimized by applying the incident beam perpendicular to the skin surface, index matching by using a cooling plate or transparent gel, or delivering the energy directly to the skin from the delivery device, as in "Photon recycling".



http://www.shorelaser.com/Light_Tissue_Interactions.html

"Power higher than 5 mW may exceed the activation levels of some chromophores
http://www.theamericanchiropractor.com/articledetail.asp?articleid=480&category=2

here's a an article which recommends power density should not exceed 30 mW cm2 when treating superficial disorders with 820/830 nm laser.

http://www.healinglightseminars.com/listing/Tendonitis.pdf

"RESULTS: Rapid increases in the level of adenosine, GH, and FGF occurred. The F/C ratio and capillary diameter peaked at 12-16 h; their levels declined gradually, reaching normal values 72 h after irradiation in the treated group. Numerous collateral blood vessels proliferated the area, with marked increases in the diameters of the original blood vessels. CONCLUSIONS: The results indicated that LLLT accelerated collateral circulation and enhanced microcirculation and seemed to be unique in the normalization of the functional features of the injured area, which could lead to occlusion of the regional blood vessels."

Last Edited On Jul-7-2009 at 6:34 PM.

Moderator Commands:

6/27/2009 12:47 AM

jdp710 (24.27.104.252)
Regrowth.com Member

hapyman said:

Dr. xxx has no "expertise" in lasers and pretty much thinks that all lasers are created equal, .

Registered: Apr 2008
Posts: 2,271
[Ignore]

My favorite part of that 20 page long debate was when Dr. xxx said that an infrared laser was the same thing as a heat lamp. He couldn't grasp the difference between coherent and non coherent light, lol.

Last Edited On Jul-22-2009 at 12:32 AM.

Moderator Commands:

6/27/2009 12:50 AM

jdp710 (207.200.116.65)
Regrowth.com Member

Registered: Apr 2008
Posts: 2,271
[Ignore]

For helmets targeting the brain using pulsed lasers

"Brainwave Frequencies are frequencies associated with different mental states. A familiar example is the five brain wave ranges recorded by the EEG; Delta Range 0.5 to 4 HZ - associated with deep sleep.

Theta Range 4 to 8 HZ - associated with dreaming sleep and other mental states where the mind is wandering, daydreaming, or imaging.

Alpha Range 8 to 13 HZ – associated with a relaxed but awake state.

Beta Range 13 to 30 HZ – associated with the normal awake/aware state and speech.

Gamma Range 30 to 60 HZ -associated with higher mental activity including perception and consciousness. General anesthesia eliminates gamma waves."

"In vivo irradiation at energy densities of 3.5J/cm2 at 3000 Hz accelerated healing of rat wounds, while a frequency of 1500 did not do so."

"FREQUENCIES Frequencies in laser dosimetry is another vast area to be considered. Lasers can be used in continuous mode or pulsed. Pulsed lasers deliver fewer joules than continuous. However, the frequency, or pulses per second, can be used to achieve specific effects. As explained by Dyson(11), the cyclotron resonance theory states that biological effects occur around particular frequencies, and these depend upon the mass and charge of the particles involved. The major activities of the cell, controlled by membrane permeability to ions such as calcium are modified by these frequency windows. Studies by the same author with the same power and energy densities showed 500 Hz to produce inhibition whereas low frequency pulsation as 2 hz produced stimulation. Studies by Ueda et al(32) with GaAlA used continuous and pulsed mode on proliferation of bone cells. Pulsed irradiation stimulated cellular proliferation, bone nodule formation, ALP activity and ALP gene _expression more than continuous irradiation. The author concluded that pulsing is an important factor affection biological response to bone formation. Bradley at the Naalt 2003 Conference suggested the following frequencies for specific pathologies

2 Hz Nerve regeneration, neurite outgrowth,

7 Hz Bone growth

10 Hz Ligamentous healing

15, 20, 72 Hz. Decreased skin necrosis, stimulation of capillary formation and fibroblast proliferation 2.5 Hz. Endorphin release

200 Hz Serotonin release

David Rindge(32) explains the principles of pulsing which is accommodated with the view that the body's sensitivity to any steady stimulus diminishes over a period of time. Pulsing aligns the rhythms of the cells when correctly used. Pulsing for lasers with a steady power output is different than for the GaAs laser which builds up to a momentary peak that may be 1000 fold greater than its average output. Tunér/Hode(33) in their book Laser Therapy suggested for superpulsed GaAs lasers

Pain, neuralgia 0 – 100 Hz

General stimulation 700 Hz

Oedema, swellings 1000 Hz

General stimulation 2500 Hz

Inflammations 5000 Hz

Infections 10,000 Hz

http://www.mdfrontiers.com/files/articles/malini%20chaudri%20&%20jan%20tuner%20on%20lllt%20-%20coherence%20journal%204.pdf

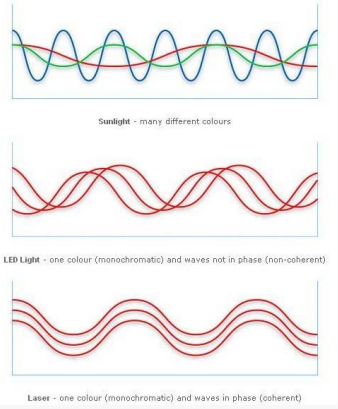
Last Edited On Jul-10-2009 at 11:50 AM.

Moderator Commands:

6/27/2009 12:51 AM

jdp710 (207.200.116.67)
Regrowth.com Member

Registered: Apr 2008
Posts: 2,271
[Ignore]



"Sun light is a mixture of seven different colors, whereas Laser Light is always of one single color. (Monochromatic). Sunlight is disorderly whereas Laser Light is very orderly (Coherent)."

http://www.thorlaser.com/LLLT/LLLT-light.htm

Last Edited On Jul-10-2009 at 11:41 AM.

Moderator Commands:

6/27/2009 1:31 AM

Anxious1 (58.110.132.171)
Regrowth.com Member

look, only the laser comb, minoxidil and propecia are fda approved, so therefore doesnt that mean that these r the only things that can regrow hair?

u have ur fda approved, proven-to-work options, either go use them, or try other things that arent fda approved, and dont complain.

Registered: Oct 2008
Posts: 739
[Ignore]

we should be under no obligation to prove anything to u, if u want undeniable proof, then go take ur daily finasteride, apply ur daily minoxidil and spend half an hour with a piss weak 9-diode laser comb.

OMG and JDP, why r u going to so much trouble to prove that it works to this guy, why waste ur time, let him either obey the FDA or do his own research, or find the research u have already presented numerous times.

Moderator Commands:

6/27/2009 2:21 AM

laserkid (24.27.104.252)
Regrowth.com Member

Registered: Apr 2009
Posts: 85
[Ignore]

I heard Dr xxx killed MJ ...

Last Edited On Jul-22-2009 at 12:32 AM.

Moderator Commands:

6/27/2009 3:47 AM

Xandros (24.22.12.42)
Regrowth.com Member

Registered: May 2009
Posts: 13
[Ignore]

Please let me begin by offering my profound apologies to anyone that I may have offended with this question; this was not my intent, nor desire. I am profoundly impressed with the personal research various members have done on this subject at great expense to their personal time.

A very sincere apology to OMG who has posted fact-based data laced with his own special blend of humor that reminds us all to fight the good fight for better days ahead. In addition, his personal website (overmachogrande.com), which must have taken a great deal of time to establish and maintain for no other reason than to provide help to others.

Once again, my apologies and thank you for all the information posted.

Moderator Commands:

6/27/2009 8:09 AM

Lapwing (24.27.104.252)
Regrowth.com Member

Registered: Mar 2008
Posts: 430
[Ignore]

Awesome information guys. I feel like such a slacker. Thanks for all the hard condensed research.

laserkid,

And the most evil part is that Dr xxx used lasers to kill MJ. He aimed a bunch of focused lasers into MJ's AV node to demonstrate that lasers don't grow hair, they kill people.

Last Edited On Jul-22-2009 at 12:33 AM.

Moderator Commands:

6/27/2009 10:09 AM

OverMachoGrande (24.27.104.252)
Regrowth.com Member

Registered: Oct 2006
Posts: 6,636
[Ignore]

Well, Xandros, the POINT of this is did you learn something? You didn't address that at all... I see the apologies, but I don't see that it actually "registered" with you. I'd like you to comment on all of this factual evidence to the compelling "debate".

Do you now realize that just ONE of these studies proves that Dr. xxx is not only a buffoon, but he's a FRAUD?

Also, do you realize that people in the forums that argue on his side at the least are absolutely ignorant and don't know what they are talking about, they've never tried this, and they are quite possibly *deceptive* and simply trying to qwell the massive uprising against their profitable minox brands (Sandman, for example)?

Do you realize that the word "debate" is ridiculous? Nothing has proven that it DOESN'T WORK... we've got the testimonials, the pictures, the scientific proof -the only thing that we are fighting against is ignoramuses and lying frauds, and you can't ever win true debates against ignoramuses and lying frauds because they LIE TO SUIT THERE NEEDS. They aren't legitimate.

We could do the next step of this again, too -which is the whole "picture proof" thing which they will simply run in circles with - but I hope we don't have to go there either. I could post 200 sets of before and after pictures from laser clinics, the sets of before and after pictures from our own use, prove why our pictures look worse than pictures taken with professional cameras, talk about the sheer number of positive testimonials, and those ingoramuses and frauds will dismiss this with one fell swoop.

If it wasn't for the fact that legitimate, frustrated people that are trying to simply fight their own hair loss were getting hurt by this, this amount of true evil, deception, and ignorance would be absolutely hilarious.

So, where do you stand on this now?

-O.M.G.

Last Edited On Jul-22-2009 at 12:33 AM.

Moderator Commands:

6/27/2009 12:38 PM

laserkid (77.99.132.15)
Regrowth.com Member

Registered: Apr 2009
Posts: 85
[Ignore]

Studies are good and all, but you can never really extrapolate the results to real life. This website is real life, real people (I hope!), with real hairloss getting real results with lasers. No need to see studies.

Moderator Commands:

6/27/2009 2:45 PM

Xandros (24.22.12.42)
Regrowth.com Member

Registered: May 2009
Posts: 13
[Ignore]

In answer to your question: - (OMG - Where do you stand now?)

Optimistically hopeful that in a set period of time (6 – 9 months) I can post positive results from personal experience with my laser helmet which I use religiously three times a week, twenty minute duration, clean - damp scalp.

While I appreciate all the responses, I still remain open to both sides of this debate with pending questions.

And yes, in my opinion this is a debate as to the effectiveness of LLLT. The studies posted above (thank you happyman – jdp710) indicate benefit from LLLT. It was these same studies supplied from you and other fine gentleman on this forum that prompted me to invest in a laser helmet. I want this to work although I know it's not a cure. If it were, this conversation would not be taking place, forums would shut down, people would buy lasers and grow all the hair they wanted. Therefore in my opinion, the effectiveness of LLLT on hairloss remains a debate.

I question the amount of money spent on research and development by commercial laser-hood manufactures opposed to your research. Why did they determine 70 diodes, inches above a dry scalp was sufficient. I doubt this was by chance. Who's right? Only time will tell.

I've previously read about posting pictures of successful LLLT users. I for one would like to see these and remain hopeful that I can submit mine as well.

Moderator Commands:

6/29/2009 10:24 AM

OverMachoGrande (24.27.104.252)
Regrowth.com Member

Registered: Oct 2006

Man, I'm telling you, when I read your post... I'm scratching my head again.

First and foremost, what I can gauge by your answer is that you DON'T see that Dr. xxx is an outright fraud. Even with an other active thread right now on "Low level light therapy proves promising for Parkinson's treatment", and all of the other discussion on how LLLT is being used with heart disease, dimentia, wound healing, inflammation, is in Phase 2 trails for alleviating stroke conditions, and STOPS HAIR LOSS... you are failing to see that the "debate" was created by a guy that not only disbelieves all of this, but he's trying to tell you that the people that are doing these amazing things are deceptive and lying to you!

Have you even watched his video?? You can't tell in three seconds that him doing any sort of surgery should frighten the hell out of you??

Posts: 6,636
[Ignore]

Also, nobody EVER EVER EVER has in the history of talking about LLLT has said it was a "cure" by YOUR definition -which by "people would buy lasers and grow all the hair they wanted" would mean a full reversal. But here is the problem, after that statement you then say "Therefore in my opinion, the effectiveness of LLLT on hairloss remains a debate." So that's not adding up. You are saying basically:

Because it's not a total cure, the effectiveness of LLLT remains a debate.

...and that doesn't make a lick of sense to me. Are you planning to post threads on the "debate" of the effectiveness of propecia and minox??

Plus, you aren't adding 2 + 2 and seeing that with your talk about comparing 70 diodes versus whatever... you are proving right there that xxx -and that whole "LLLT CAN'T work" debate- is BOGUS. I'll repeat it... he said it CAN'T work, not anything about "how much".

Finally, the thread with the links to all of our pictures has been in the exact same place it has been for MONTHS... the "Positive Testimonials" thread. You are telling me now that you haven't even checked that thread!!! WTF, man!

I don't mean to be beating you up, I really don't. I just get frustrated that people aren't holding this guy accountable for his FRAUD on the innocent hair loss sufferer that doesn't give a damn about one doctor's ego! HE is one of the reasons that you have less hair right now.

I think it's extremely suspicious that no one but US ever holds Dr. xxx and his ignorant stooges accountable. The guy should have had his career ruined -and at the least, should have lost all credibility in the forum world.

But he hasn't, and I think that's because all other forums -save for Regrowth and HairLossFight.com- are fixed.

So, someone new that missed all of this may wonder why I'm taking this personally. I'll sum it up.

1) I want to help people regrow there hair, and THAT'S IT. ...And I've done a fucking yeoman's job of it, too, if I will allow myself a brief "pat on the back". I cut through the bullshit, and I don't like anybody that is one iota deceptive. That's why I've had free instructions on my site how to make those devices for EONS, I'm ALWAYS unbiased about this information, and I didn't even start making the best laser device ever made until this year -by popular demand, and by the request a REAL transplant surgeon, who is also the Intercytex spokesman (a really smart guy).

2) I've noticed for a long time that unlike any other forum I've seen, hair loss forums are NOT a free exchange of ideas. They are "bought and paid for" or illegitimately shilled by the hair loss industry. Think I'm wrong? Explain why Dr. xxx gets away with what he does. Explained why that thread that made him a laughing stock got deleted. Explain why the devices built to our laser protocols have more success than any other hair loss treatment in this quick of a time, it's chronicled, and yet you go to the other forums and there is practically ZERO TALK of this.

3) This last point has to do with Dr. xxx himself. He lies, cheats, deceives, runs people in circles, avoids questions, etc:

a. When I confronted him with the most well known study about LLLT and hair loss that ANYONE who is interested in this has found before... he accused ME of making that study up. That's laughable, and ten seconds on google would have showed that I didn't. That alone should have ruined his credibility in the argument.

b. He lied about me personally. When I confronted him about his STUPID, illogical, failing-sixth-grade science statements such as "cashiers in supermarkets do not grown excess hair on their hands, therefore this phenomenon does not exist", he resorted to saying things like "Don't listen to OverMachoGrande. I personally know that he's been banned from most forums he's been a part of". That's an outright lie. I'm a moderator of TWO forums, I have a standing invitation to be a moderator of TWO MORE, and I've never been banned from a forum in my life.

c. He saw my site with free information, studies, and free instructions (on how to build the second greatest laser device ever) and said "Clearly, OverMachoGrande is a SHILL for the LLLT industry", and would continue saying that when I would confront him on the substance of his argument. Remember, at that time... I had never received ONE DIME, FAVOR, OR PITTANCE from anyone for this, nor did I ever plan to. I worked my ASS OFF trying to make a great, free site, with the selfless intention of helping others -and I was tarred and feathered for it (and only recently I have realized it's because of the illegitamite nature of forums).

d. He CHANGED HIS ARGUMENT REPEATEDLTY. As you know, his video is entitled "Why LLLT CAN'T Work", and line-by-line you can refute everything he says as not only wrong, but STUPID. Ok, but after confronted with all of our evidence, he changed it to "Well, it may work SOME, but not cosmetically significant in my opinion." OK, RIGHT THERE, he completely invalidated his video. He changed his argument AGAIN to "Laser Therapy will never be able to produce results like a TRANSPLANT". Oh my god... No shit, you can't compare a treatment to SURGICAL RESTORATION!

e. He knew NOTHING about laser therapy. I already told you that he accused me of making up the most famous study on LLLT and hair loss -which shows you he was unfamiliar with it. He had no idea what we were talking about with "windows of energy" and joules per square centimeter. JDP710 or myself would make lengthy posts on the "how and why" laser therapy works, including the time and energy involved with getting the correct amount of energy, and his response would be "I know lots of people that have used laser COMBS at their homes for years and they never had any results, therefore you are wrong". LMAO... he had NO CLUE what we were talking about!

So, did the other people -besides about five of us- ever see that he was doing that and call him out on it? No. If any of us EVER did any of that, we would have been booted out of the discussion, yet this guy gets away with it and is still looked up to. ...And you now are doing what most people do. Just "ignore" the fact that the guy that's behind all of this "debate" is a sociopathic, egomaniacal imbecile that doesn't give a DAMN about your hair loss. If he did... he'd learn about this.

Which reminds me... notice that NO ONE that is on his "side" actually knows anything about laser therapy. They have no clue about what we are talking about -and they certainly haven't tried it themselves. Do you know why? When they DO take the time to learn about this and try it themselves... they are no longer on his "side". They are then on OUR SIDE.

This whole "debate" is a waste of time. The proof is here -by us, by laser clinics, by scientific studies. The only reason I'm writing this stuff again is because I'm bookmarking this thread so I never have to relive the silly hoax that this evil, fradualent BUFFOON has perpetuated over YOU and the other people out there that are simply trying to stop their own hair loss.

That's pretty much all there is to say about that.

-O.M.G.

PS- JDP710... Feel free to add points "f" to "z"! I know I forgot some of the big things that showed how deceptive and inept this "doctor" was.

Last Edited On Jul-22-2009 at 12:36 AM.

Moderator Commands:

6/29/2009 11:35 AM

Peac33 (70.80.41.179)
Regrowth.com Member

Registered: Jun 2009
Posts: 2
[Ignore]

Woah, this is a lot of text .. Can i change the subject for 1 sentence? I am making my own laser helmet and i would like to know if my concept would be good enough to publish on OMG website. Is there any submission e-mail i could use to publish my concept ?

It's for the good of people!

Tx and sorry for the interruption.

Moderator Commands:

6/29/2009 12:11 PM

OverMachoGrande (74.178.221.106)
Regrowth.com Member

Hey, Peac33!

Shoot me an email at omg (at) overmachogrande (dot) com!

-O.M.G.

Registered: Oct 2006
Posts: 6,636
[Ignore]

Moderator Commands:

6/29/2009 12:29 PM

hapyman (76.189.202.250)
Regrowth.com Member

Chiming in about the 70 diode devices. There devices are basically a compromise. Easier and quicker to build and more generalized, meaning more standard for everyone. You know how hard it would be to commercialize custom laser helmets. I doubt any company wants to invest the time or the resources to make that happen.

I am not saying they didn't look at the science I just think they thought it was "good enough". Using focused lasers, whatever inches from the head, for x amount of minutes. People do get "some" results from using the lasermax for example, but most people who switch have gotten much better results.

Registered: May 2008
Posts: 1,526
[Ignore]

Moderator Commands:

6/29/2009 9:56 PM

LaserMeUp (81.103.22.204)
Regrowth.com Member

So can someone confirm...do lasers cause genital herpes?

Registered: Apr 2009
Posts: 54
[Ignore]

Moderator Commands:

6/30/2009 5:23 PM

OverMachoGrande (74.178.208.116)
Regrowth.com Member

Actually, LaserMeUp...

They PREVENT genital herpes because they make your hair full enough that you can pick up nice, beautiful women and leave the dirty whores for your bald friends.

However, they do cause a PLETHORA of brain lapses and mass negative hysteria.

I actually explain why that is in "The reason why you don't know a thing about "laser helmets", why LLLT *still* gets routinely dismissed in forums, and why everyone -including you- hasn't been doing this for years."

Registered: Oct 2006
Posts: 6,636
[Ignore]

"So, like I said, 'accepting' laser therapy is very tough for some. When someone figures all of this out, they will have had to come to terms with the fact:

• that the forums missed the greatest hair loss treatment in decades,

• that "respected doctors" who release videos entitled "Why LLLT CAN'T Work" are at the very least buffoons and at the most absolutely corrupt and evil,

• that companies missed an opportunity to make product that actually works vs. a money-maker with one diode that sells for over half a grand when it costs probably 20 dollars to manufacture,

• and even that people that say "you guys are hyping this up too much... lots of things work" are even failing to grasp this."

So, yes... lasers cause mass hysteria, dogs and cats living together, and the end of the world as we know it.

-O.M.G.

Last Edited On Jun-30-2009 at 6:44 PM.

Moderator Commands:

6/30/2009 6:42 PM

jdp710 (207.200.116.69)
Regrowth.com Member

lol, that's hilarious!

On another note, LaserMeUp check this out ... I've read to many of these damn studies, lol

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Registered: Apr 2008
Posts: 2,271
[Ignore]

"Low-Intensity Laser Therapy Is An Effective Treatment For Recurrent Herpes Simplex Infection. Results From A Randomized Double-Blind Placebo Controlled Study

Schindl A, Neuman R. J Investigative Dermatology. 1999; 113 (2): 221-223.

50 patients with recurrent perioral herpes simplex infections (at least once a month for more than 6 months) were treated with 690 nm, 80 mW laser, 48 J/cm2, in a double blind study. Patients received daily irradiations for two weeks, 10 treatments. The treatment was given in a recurrencefree period and the irradiation was given at the site of the original herpes simplex infection. If both lips were involved, both upper and lower lips were treated. Patients were monitored for 52 weeks. The mean recurrence-free interval in the laser group was 37.5 weeks (range; 2-52 weeks) and in the placebo group 3 weeks (range 1-20 weeks). No side effects were noted."

There is another study here

http://www.rj-laser-canada.com/spanish/src_herpes.htm

Last Edited On Jun-30-2009 at 8:02 PM.

Moderator Commands:

6/30/2009 7:56 PM

LaserMeUp (81.103.22.204)
Regrowth.com Member

Fucking Hell!!!

What next???

'LLLT cures world poverty!'

'LLLT solves War in Iraq!'

' News Flash; LLLT Finds Bin Laden!'

LOL that Reminds me session 4 with my new 299 laser helmet (1 is dead)! Run, shower, Alpecin, Grow!

Peace out.....and I had become quite fond of my herpes!

Registered: Apr 2009
Posts: 54
[Ignore]

Moderator Commands:

7/1/2009 2:22 PM

OverMachoGrande (24.27.104.252)
Regrowth.com Member

Bump for Xandros...

I asked you some direct questions about your response -especially about the instigator of this "debate" - right under your last response in this thread.

As ALWAYS, for some reason people don't directly respond to questions and then disappear whenever xxxxx is called out on being a fraud, so I'd like to hear a response from you. Oh, I know the reason why... most are "plants" or have something to gain by creating more confusion, so do me a favor and show me that you aren't doing that.

-O.M.G.

Registered: Oct 2006
Posts: 6,636
[Ignore]

Last Edited On Jul-22-2009 at 12:28 AM.

Moderator Commands:

7/5/2009 3:39 PM

hermann (89.55.29.243)
Regrowth.com Member

Registered: Mar 2009
Posts: 44
[Ignore]

Hey jpd,

many thanks for the flood of information on LLLT. And there's much more about it in the world.

I want to make a suggestion. Could you, with the help of Regrowth moderators, collect these articles on one place where it is easy to access to by an index, located on Regrowth.com? A LLLT manual like a one person thread? Then if anyone asks again for LLLT absorption you only provide a link to the LLLT manual. Maybe it is more work for you at first but later it is less work for you, and users can autonomously get into the deep..? Central link on Regrowth.com to the LLLT articles would also be a nice feature.

Moderator Commands:

7/12/2009 4:24 PM

OverMachoGrande (74.178.195.249)
Regrowth.com Member

Registered: Oct 2006
Posts: 6,636
[Ignore]

Hermann...

We are ABSOLUTELY working on this, and I should have done this six months ago! It'll be a new site, but it's going to be "all inclusive" -which means it's going to have data on EVERYTHING, not just lasers.

-O.M.G.

Moderator Commands:

7/13/2009 9:15 AM

Regrowth.com Webmaster (24.27.104.252)
Regrowth.com Member

Registered: Jan 2001
Posts: 211
[Ignore]

The doctor's name in question has been removed from the thread. This is not due to any financial relationship between himself or this site but because he has threatened a lawsuit against the website if they are not removed. I am not a judge in order to determine whether the statements in this thread are legally actionable, but I can't afford a lawyer to defend against such a suit so unless someone is willing to provide legal representation in the state in question there is not much I can do. It is the policy of the site that libelous and defamatory statements that are legally actionable will be removed. If you wish to make such statements then you must stand behind them by providing your real identity so that legal action can be brought against you and not this site. In this case because of the number of posts, I decided to save you that and just remove the reference to the name completely.

I'm not up on this doctor or the debate but any further statements should not be made about the doctor whatsoever unless you wish to provide your true identity otherwise they will be removed. You are really giving the doctor a lot of publicity in the thread by mentioning the name so much anyway.

Moderator Commands:

7/22/2009 12:41 AM

Lakers (68.225.238.187)
Regrowth.com Member

Registered: Feb 2008
Posts: 661
[Ignore]

what state would that be? I've got three lawyers in my family in different states and I really hate this doctor

Moderator Commands:

7/22/2009 1:18 AM

Regrowth.com Webmaster (24.27.104.252)
Regrowth.com Member

Registered: Jan 2001
Posts: 211
[Ignore]

HMM he gave the city his lawyer was based in (Garden City) but I don't recognize what state it is in and he didn't say so I'm guessing whatever state he is based out of.

Moderator Commands:

7/22/2009 1:25 AM

OverMachoGrande (74.178.217.141)
Regrowth.com Member

Registered: Oct 2006
Posts: 6,636
[Ignore]

My name is John Christian, and my address is 3661 Doctors Lake Drive, Orange Park, FL 32065.

I stand behind everything I've ever said about this doctor, and unfortunately the statement "You are really giving the doctor a lot of publicity in the thread by mentioning the name so much anyway." isn't exactly valid. This doctor is in the position in which he creates publicity for himself -publicity that has no scientific merit and is full of slander against others- and that "publicity" has gone unchallanged at the cost of many hair loss sufferer's expense.

We're the only people both brave enough and smart enough to challenge him.

I, however, will respect your decision, and I will simply respond to any inquiries about him the following statement:

For potential legal reasons, I'm am unable to address the particulares of any harm this doctor may or may not be causing the hair loss industry. Feel free to email me at omg@overmachogrande.com if you want more details, but they can not be freely discussed in this forum.

So, thank you everyone that has had the courage to stand up to this "man". We did what is right -which sometimes doesn't get you far, and certainly doesn't get you appreciated- but it has opened up a lot of people's eyes to something they would have missed. Out of the literally thousands of emails I've gotten in just the last few months, I hear that by email ALL THE TIME.

Congrats, guys!

-O.M.G.

Last Edited On Jul-22-2009 at 7:29 AM.

Moderator Commands:

7/22/2009 7:18 AM

QuickReply >> To respond, enter your message below or click [POST REPLY] for more options.

user: **OverMachoGrande**
[LOGOUT]

Add Signature
Email Notification

All times are in local Central Standard Time. The current time is 07:29:25 AM.