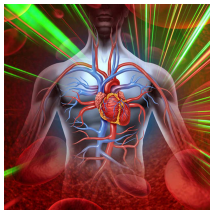
Latest Research on the new “Laser Watch“



Axel von Hirschheydt, MD

Lauenfoerde/Germany

12th International Conference for Medical Laser Applications

June 09/10 2017, Beverungen/Germany

Research Network:

GEORG-AUGUST-UNIVERSITÄT GÖTTINGEN

ISLA RESEARCH GROUP
International Society for Medical Laser Applications

Philipps Universität Marburg

NAALT
North American Association for PhotobiomoduLation Therapy

UNIMORE
UNIVERSITÀ DEGLI STUDI DI MODENA E REGGIO EMILIA

MAYO CLINIC

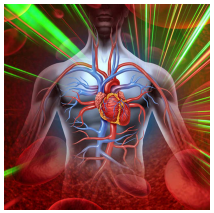
Medizinische Universität Graz

ISLA
International Society for Medical Laser Applications

UNIVERSITY OF MEDICAL SCIENCES
ONDO STATE, NIGERIA

FACULTY OF MEDICINE
1972
KHON KAEN UNIVERSITY

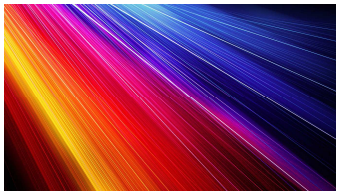
Development of Weber Medical Laser Watch:



1st generation: Red laser (2015)

2nd generation: Red + Blue (2016)

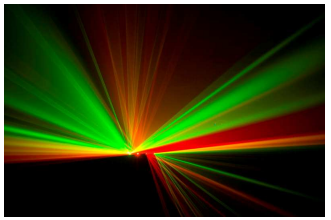
Weber Medical Laser Watch: Regenerate+ with Red, Blue and Yellow Light



Laser Watch Regenerate+

N° Red Diodes/ Wavelength	13 (incl. applicators) / 650 nm
N° Blue Diodes/ Wavelength	7 (incl. applicators) / 450 nm
N° Yellow Diodes/ Wavelength:	6 (incl. applicators) / 589 nm
Output Power:	2-5 mW

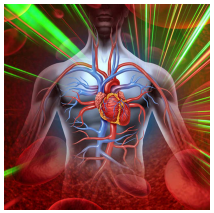
Weber Medical Laser Watch: Active+ with Red and Green Light



Laser Watch Active+

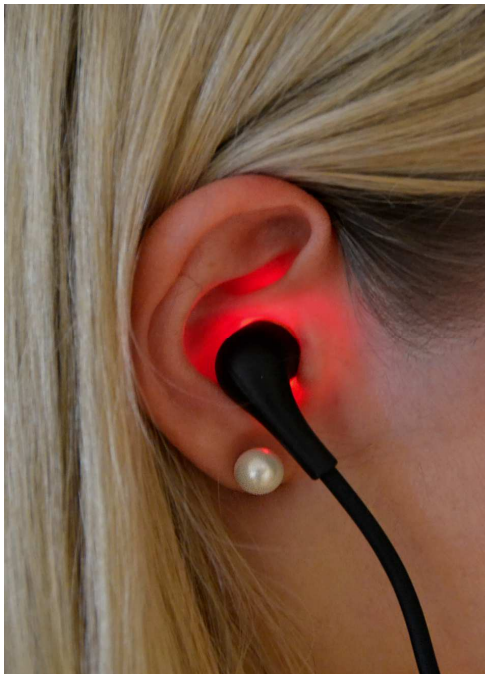
N° Red Diodes (650 nm):	Laser Watch(6)
	Laser Pad(12)
	Ear Applicator (2)
	Nose Applicator (2)
N° Green Diodes (532 nm):	Laser Watch(4)
Output Power:	2-5 mW

Weber Medical Laser Watch: Accessories



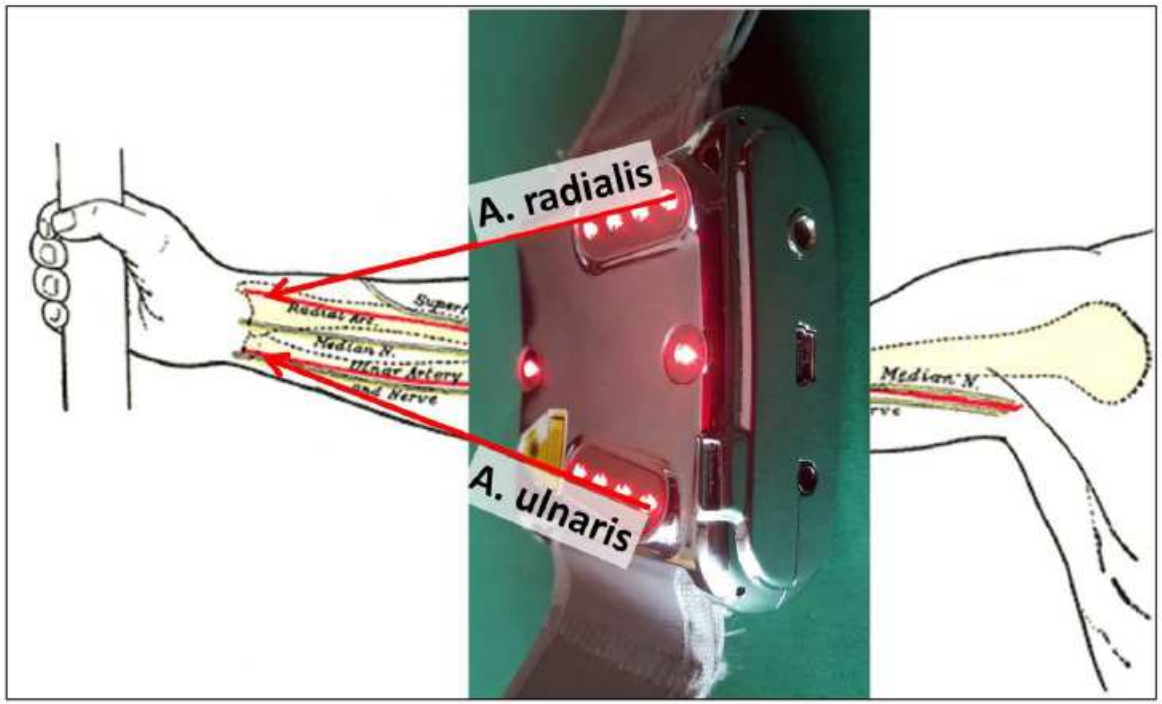
Local Pain Therapy

Intra-nasal treatment (i.e. sinusitis)



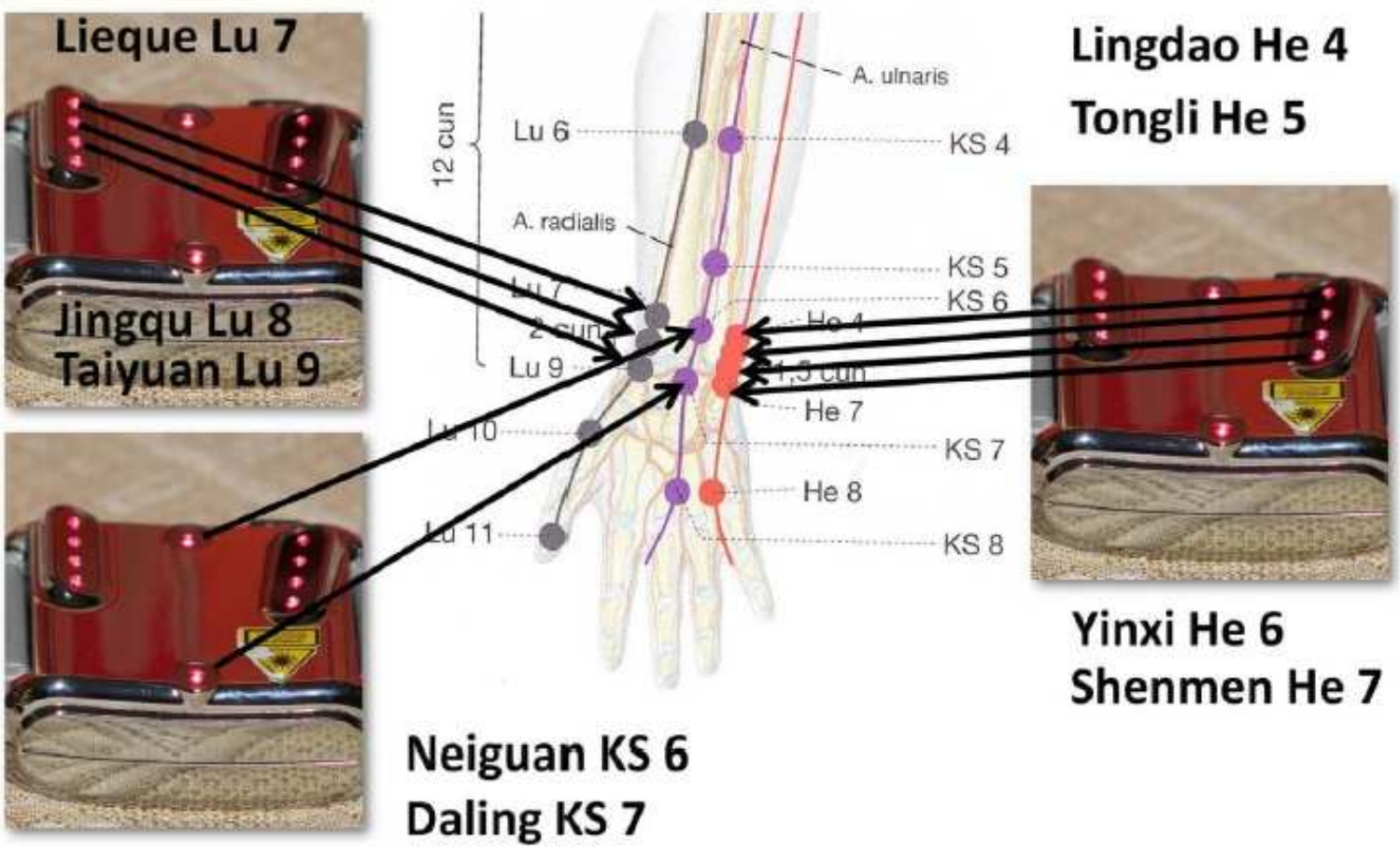
Inner ear treatment (i.e. tinnitus)

Application/Protocol:

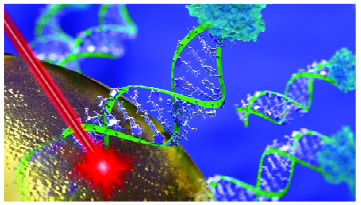


Laser Watch can be used once or twice per day for 30-60 min.

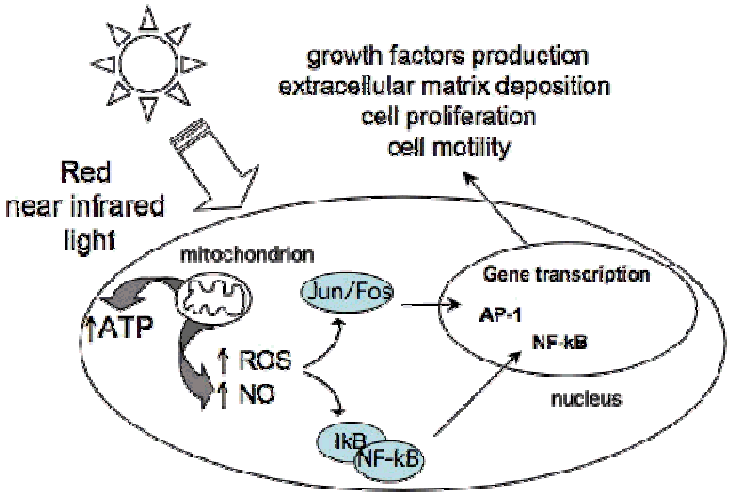
Stimulation of Acupuncture Points:



Biochemical Mechanisms of systemic laser therapy:

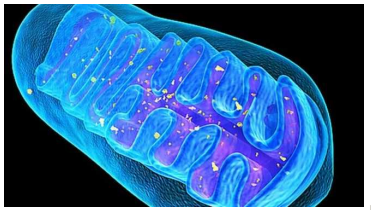


- In general, there are specific cellular structures that are able to absorb specific wavelengths (colors) of light (known as photoreceptors)
- The light stimulus gives a cellular signal affecting the chemical behavior, metabolism, movement and gene expression
- All associated enzymes and/or proteins are now affected
- This cascade event can ripple across an entire cell

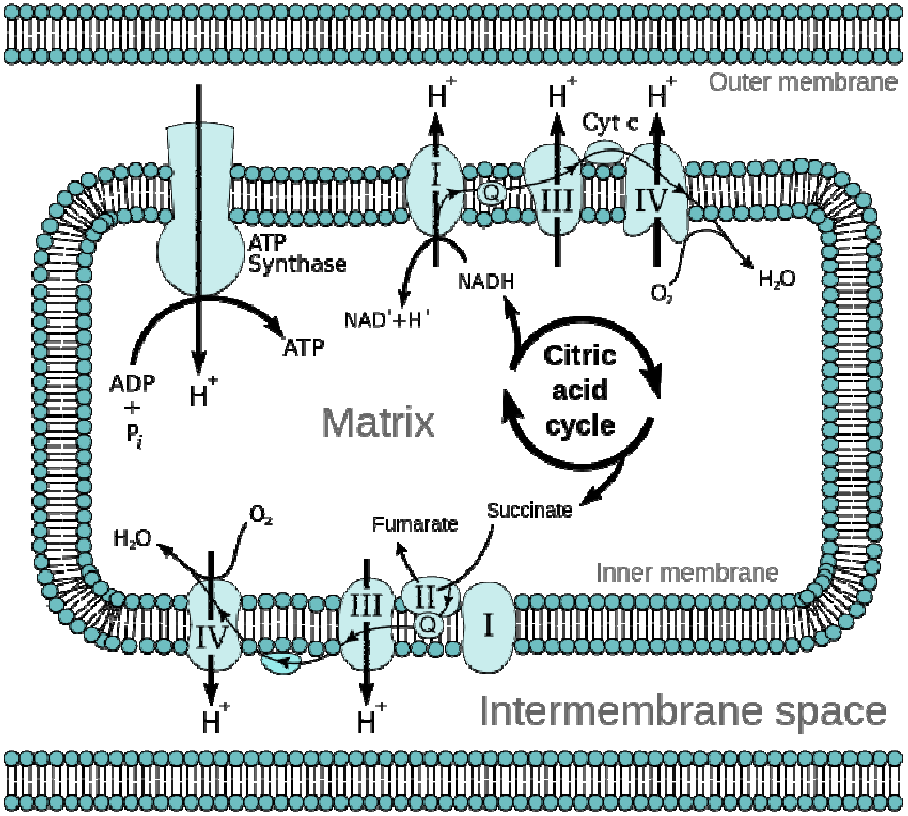


Hamblin:
http://photobiology.info/Hamblin.html

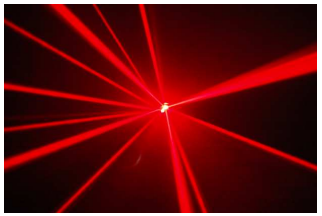
Absorption of Difference Light Wavelengths (Colors) in Mitochondria



- One example for the absorption of different colors within cells is the process in the mitochondrial respiratory chain
- Complex 1 (NADH dehydrogenase) absorbs blue and ultraviolet light
- Complex 3 (cytochrome c reductase) absorbs green and yellow light
- Complex 4 (cytochrome c oxidase) absorbs red and infrared light



Effects of Red Light:



- Red laser is well-known for its ability to enhance cell activity and microcirculation
- Activates the immune system by stimulating different leukocyte groups
- Activation of phagocytic activity of macrophages
- Development of so-called “giant mitochondria” with activation of various metabolic pathways, increased production of ATP and normalization of cell membrane potential
- Analgetic, spasmolytic and sedative effects
- Activates various enzymes and reduces blood lipids (enhances the process of lipid peroxidation to reduce the amount of cholesterol in the vessels)

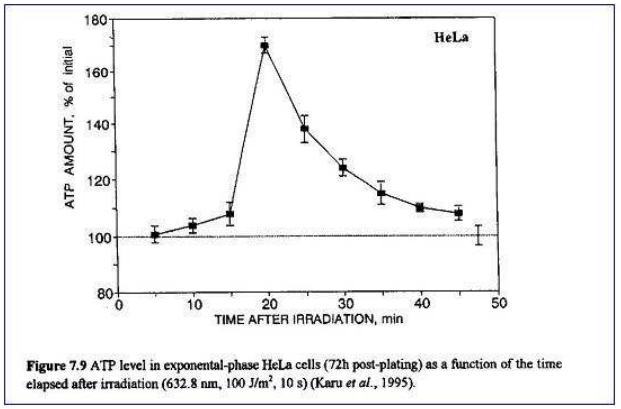
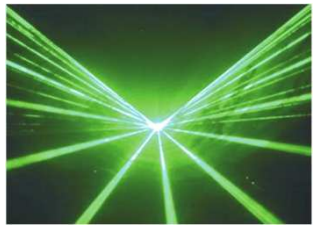


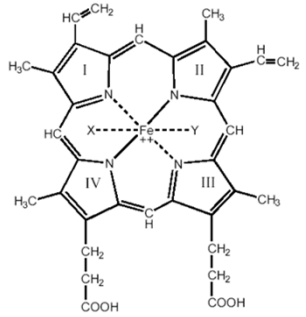
Figure 7.9 ATP level in exponental-phase HeLa cells (72h post-plating) as a function of the time elapsed after irradiation (632.8 nm, 100 J/m², 10 s) (Karu *et al.*, 1995).

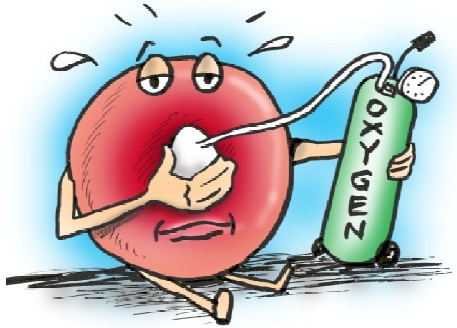
ATP-Increase under laser irradiation (632 nm, red light) of a HeLa cell-culture

Effects of Green Light:

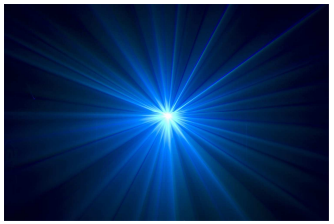


- Green binds to hemoglobin
- Improves the function, behavior and cell elasticity of red blood cells
- Increases Oxygen Delivery
- Reduces blood viscosity and improves blood flow
- Activates reparative and stabilizing pathways
- Platelet activation with gradual loss of natural platelet reactivity and ability to respond to activating agents
- Positive effect on Sodium/Potassium Pump, which helps to regulate intra-and extra-cellular cation homeostasis
- Kassak et al. (2005): Green laserlight increases the production of ATP in the irradiated mitochondria for more than 30%

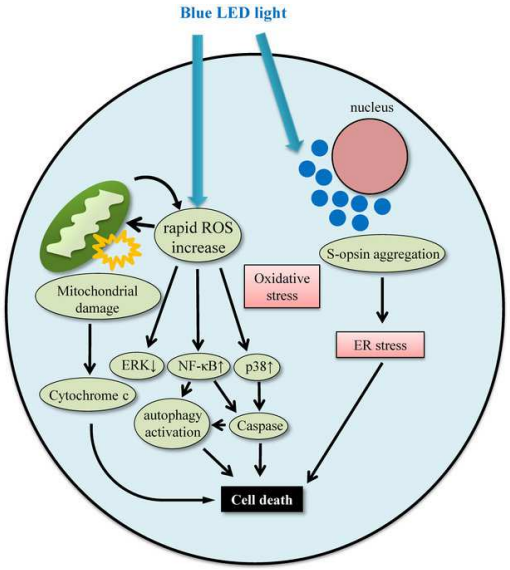




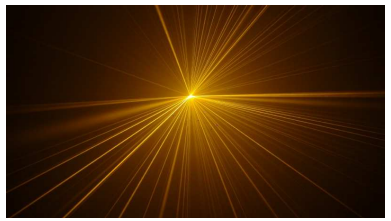
Effects of Blue Light:



- Blue light **releases nitric oxide (NO) in monocytes with vasodilatation and improvement of endothelial dysfunction**
- NO is known to be a growth, immune, and neuromodulator, as well as a stimulator of stem cell proliferation and it has a critical roles in analgesia, vasodilation and angiogenesis through c-GMP pathway
- Increased production of NO is activating the telomerase and thus stopping shortening of telomeres → anti-aging
- Increased NO is lowering blood pressure
- Blue laser is known to act anti-inflammatory by reducing pro-inflammatory cytokines and contributory factors for a variety of conditions (NF-kB, CRP, IL2, IL6, TNF alpha, Leptin, chemokines etc.)
- Blue light is effective for treating infections by production of ROS (especially in combination with photosensitive substances like Curcumin or Riboflavin) [14]



Effects of Yellow Light:

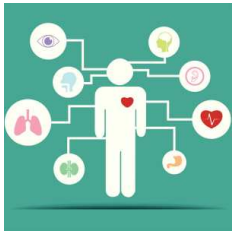


- Improvement of the anti-oxidant enzymatic system with detoxifying effect
- Strong anti-depressive effects (especially in combination with Hypericin from St. Johns Wort Plant) and positive influence on the general mood
- Positive effects on pain relief in chronic pain patients
- Improves Serotonin and Vitamin-D production
- Positive effects on the hormone system

Summary: Main Effects of the Laser Watch

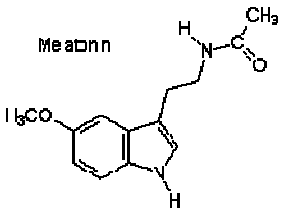
- Boosting cellular energy by increase of ATP synthesis
- Immune System Stimulation
- Improvement of microcirculaton and reduction of blood viscosity
- Activation of macrophages
- Positive effects on heart and metabolism
- Improves the function, behavior and cell elasticity of red blood cells
- Increases Oxygen Delivery
- Activates reparative and stabilizing pathways
- Releases Nitric oxide (NO) and activates telomerase
- Brings down blood pressure
- Reduces inflammations
- Detoxifying effects
- Positive influence on the general mood (strong anti-depressive effects)
- Improves Serotonin and Vitamin-D production
- Pain relief
- Positive effects on the hormone system

Areas of Application:

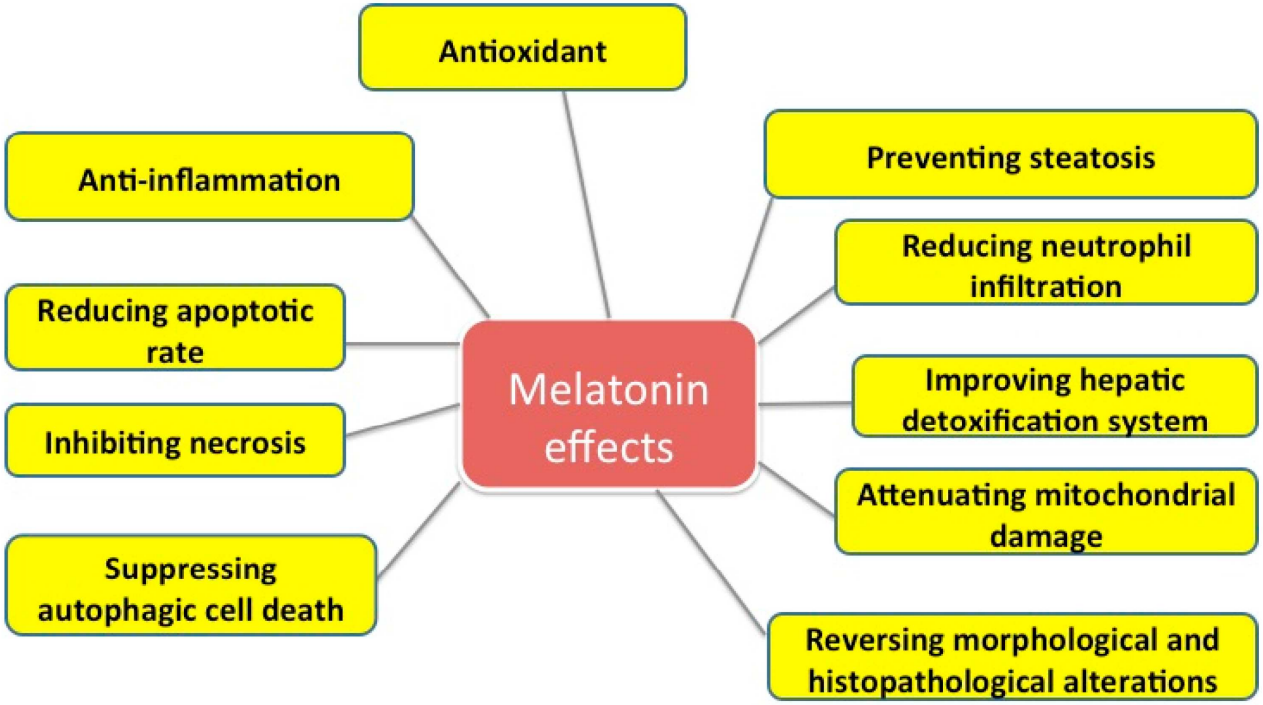


- Internal Diseases (Diabetes, chronic liver and kidney diseases)
- Metabolic disorders
- Cardiovascular protection
- Allergies
- (Chronic) Inflammation
- Hypertension
- Auto-immune diseaes
- Sleep improvement
- Prevention of jet lag and thrombosis
- Immune system strengthening
- Fatigue
- Anxiety
- Tinnitus
- Depression, fatigue-syndrome and burn-out
- Anti-Aging
- General performance increase (in sports)
- Additive Cancer Therapy (in combination with photosensizing agents) and prevention

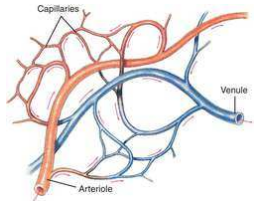
Studies (1): First Observations (Red Laser)



- Significant increase of Melatonin (30-100 %)
- Increase of Serotonin (50-100 %)
- Improved sleep quality
- Less fatigue



Studies (2): Microcirculation and ANS (Red Laser)



Daniela Litscher und Gerhard Litscher (2015): LASER WATCH – SIMULTANEOUS LASER ACUPUNCTURE AND LASER BLOOD IRRADIATION AT THE WRIST

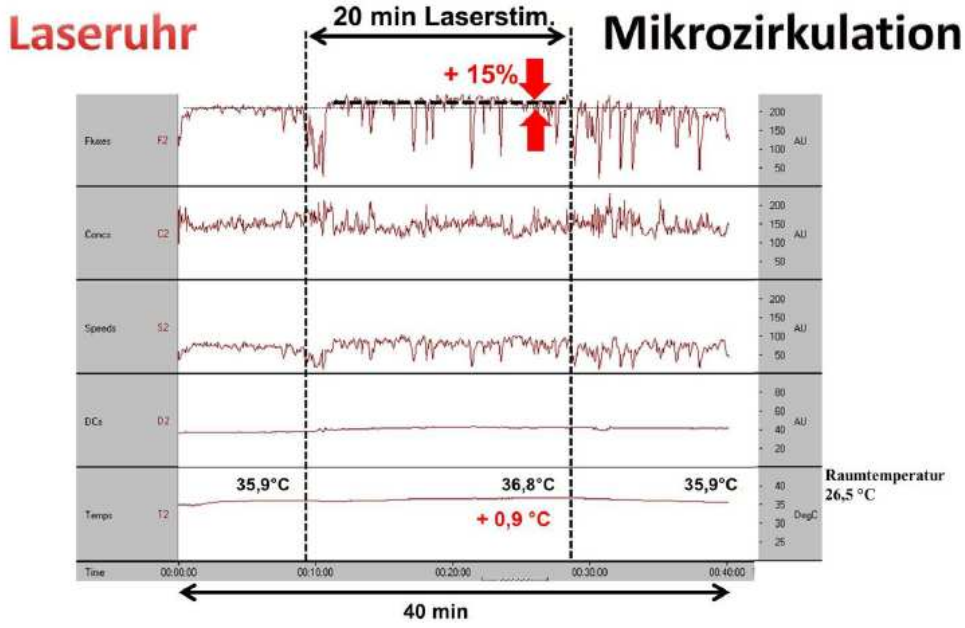


Diagram:
Laser watch
20 minute laser stimulation
Microcirculation
Room temperature

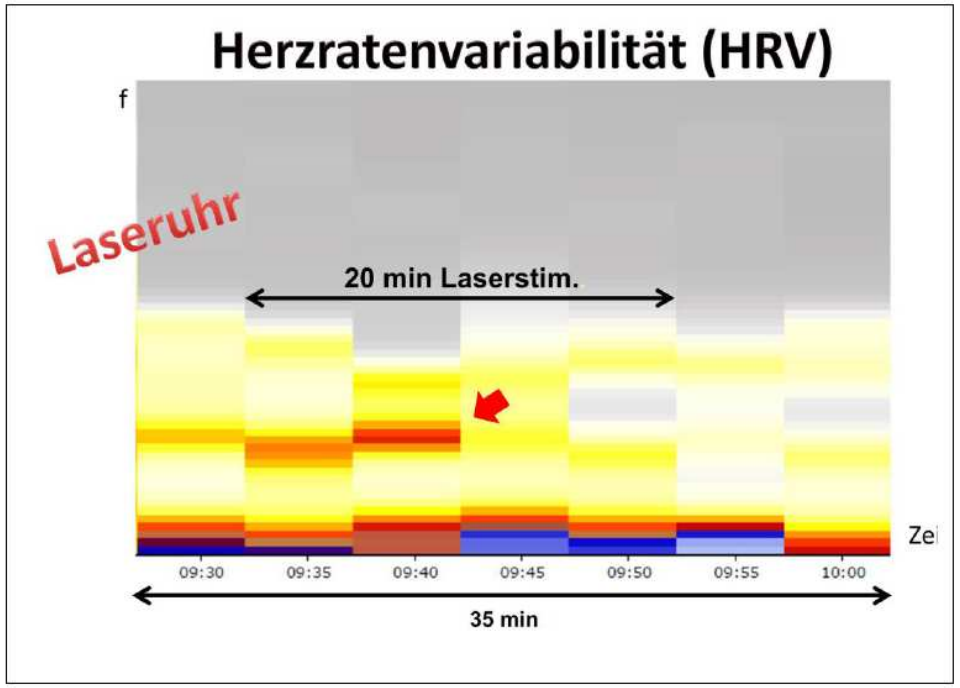


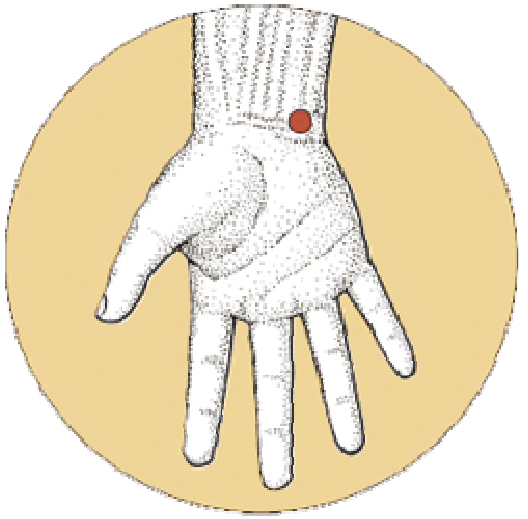
Diagram:
Heart Rate Variability (HRV)
Laser watch
20 minute laser stimulation
Time

Studies (3): Laser Acupuncture at HT7

Laser Acupuncture at HT7 Acupoint Improves Cognitive Deficit, Neuronal Loss, Oxidative Stress, and Functions of Cholinergic and Dopaminergic Systems in Animal Model of Parkinson's Disease

Jintanaporn Wattanathorn [1,2,*] and Chatchada Sutalangka [2,3]
Department of Physiology, Faculty of Medicine, Khon Kaen University, Khon Kaen 40002, Thailand

In conclusion, laser acupuncture at HT7 can improve neuron degeneration and memory impairment in animal model of PD partly via the decreased oxidative stress and the improved cholinergic and dopaminergic functions.



Studies (4): Multi-Center Study Switzerland

Dr. med. Andreas Wirz-Ridolfi, Switzerland (2016):

- 20 patients (12 male, 8 female), age between 18 and 76
- 2 patients with type 1 diabetes
- 18 patients with type 2 diabetes
- **Red laser watch (1st generation) was used**
- **Tested on blood pressure, cholesterol and liver values**

Studies (4): Multi-Center Study Switzerland

Results: Blood pressure

Highest value:

Before: 170/90, after: 140/85 mmHg

Lowering of blood pressure in average:

Systolic 10,04, Diastolic 6,54 mmHg

In percentage: 7,9 %

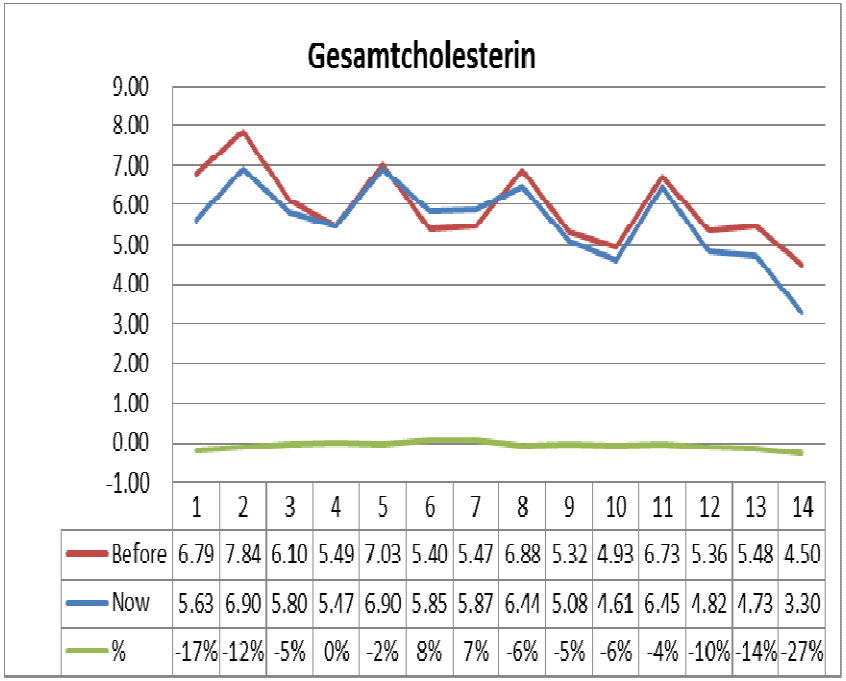
Studies (4): Multi-Center Study Switzerland

Results: Cholesterol

Average before: 5,95, after: 5,5mmol/l

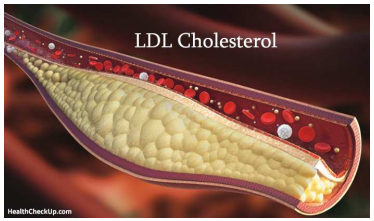
Lowering in average: - 0,39 mmol/l

In percentage: - 6,6 %



	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Before	6.79	7.84	6.10	5.49	7.03	5.40	5.47	6.88	5.32	4.93	6.73	5.36	5.48	4.50
Now	5.63	6.90	5.80	5.47	6.90	5.85	5.87	6.41	5.08	4.61	6.45	4.82	4.73	3.30
%	-17%	-12%	-5%	0%	-2%	8%	7%	-6%	-5%	-6%	-4%	-10%	-14%	-27%

Studies (4): Multi-Center Study Switzerland

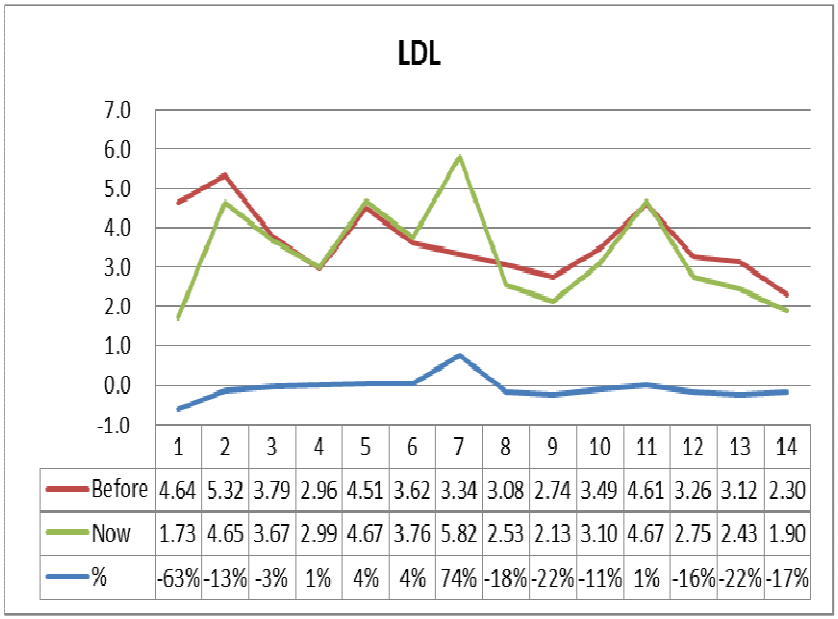


Results: Lipids (LDL)

Average before: 3,63, after: 3.34 mmol/l

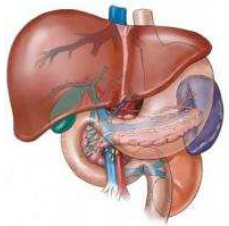
Lowering in average: - 0,28 mmol/l

In percentage: - 7,8 %



	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Before	4.64	5.32	3.79	2.96	4.51	3.62	3.34	3.08	2.74	3.49	4.61	3.26	3.12	2.30
Now	1.73	4.65	3.67	2.99	4.67	3.76	5.82	2.53	2.13	3.10	4.67	2.75	2.43	1.90
%	-63%	-13%	-3%	1%	4%	4%	74%	-18%	-22%	-11%	1%	-16%	-22%	-17%

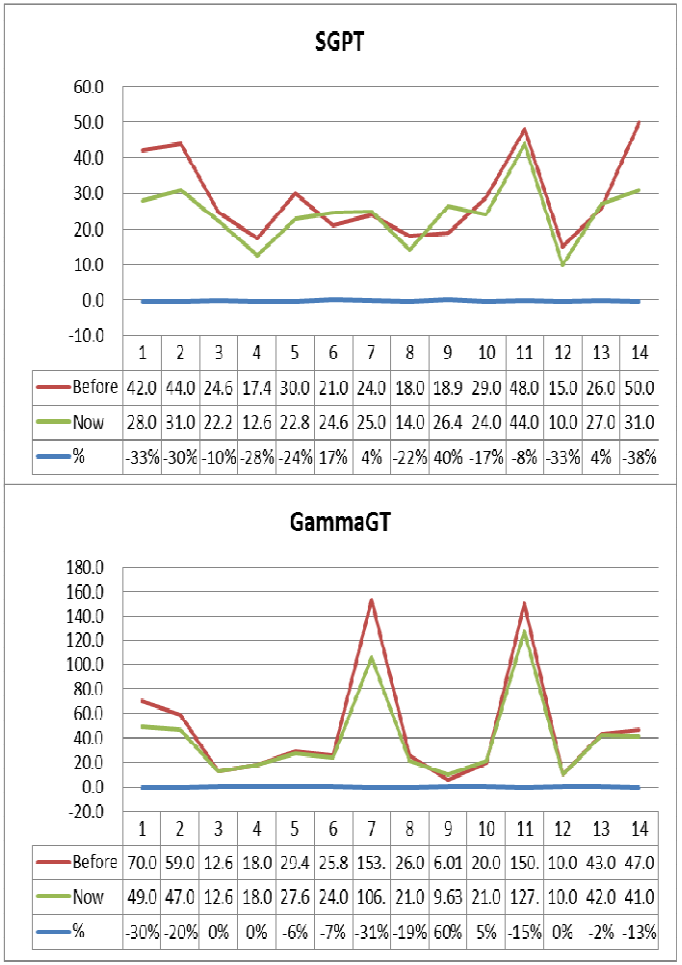
Studies (4): Multi-Center Study Switzerland



Results: Liver (GPT)

Average before: 29,14 IU/l. after: 24,47 IU/l
Lowering in average: - 4,66 IU/l

In percentage: - 16,0 %



	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Before	42.0	44.0	24.6	17.4	30.0	21.0	24.0	18.0	18.9	29.0	48.0	15.0	26.0	50.0
Now	28.0	31.0	22.2	12.6	22.8	24.6	25.0	14.0	26.4	24.0	44.0	10.0	27.0	31.0
%	-33%	-30%	-10%	-28%	-24%	17%	4%	-22%	40%	-17%	-8%	-33%	4%	-38%

Results: Liver (GammaGT)

Average before: 47,84 IU/l, after: 39,70
Lowering in avarage: - 8,14 IU/l

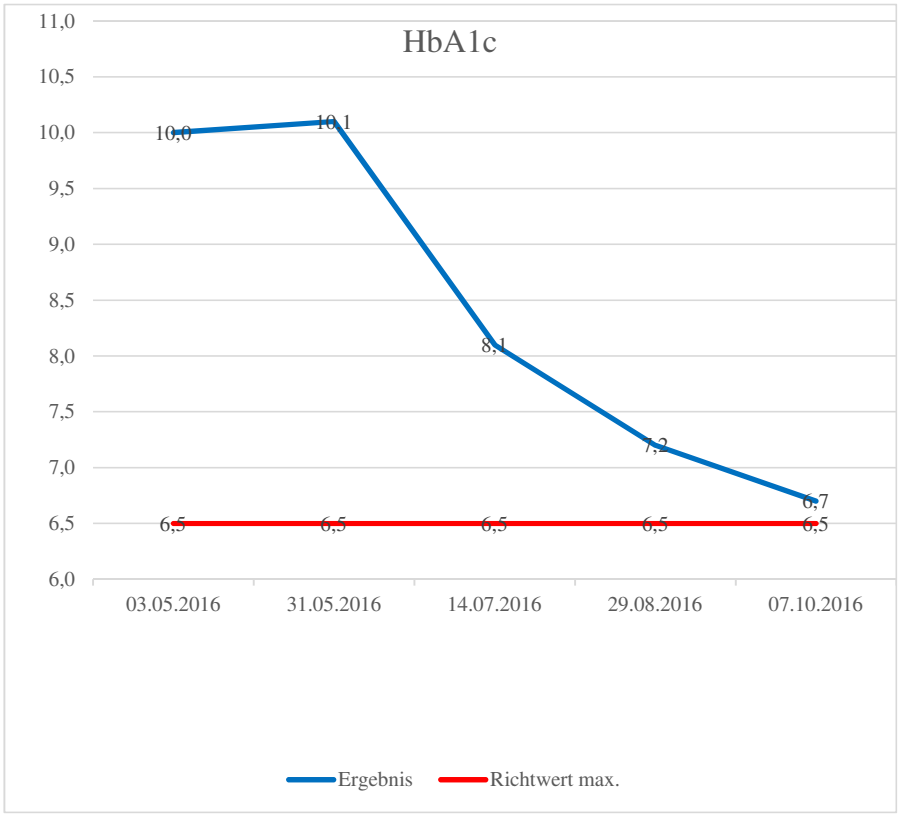
In percentage: - 17,0 %

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Before	70.0	59.0	12.6	18.0	29.4	25.8	153.	26.0	6.01	20.0	150.	10.0	43.0	47.0
Now	49.0	47.0	12.6	18.0	27.6	24.0	106.	21.0	9.63	21.0	127.	10.0	42.0	41.0
%	-30%	-20%	0%	0%	-6%	-7%	-31%	-19%	60%	5%	-15%	0%	-2%	-13%

Studies (5): Diabetes (Case Report)

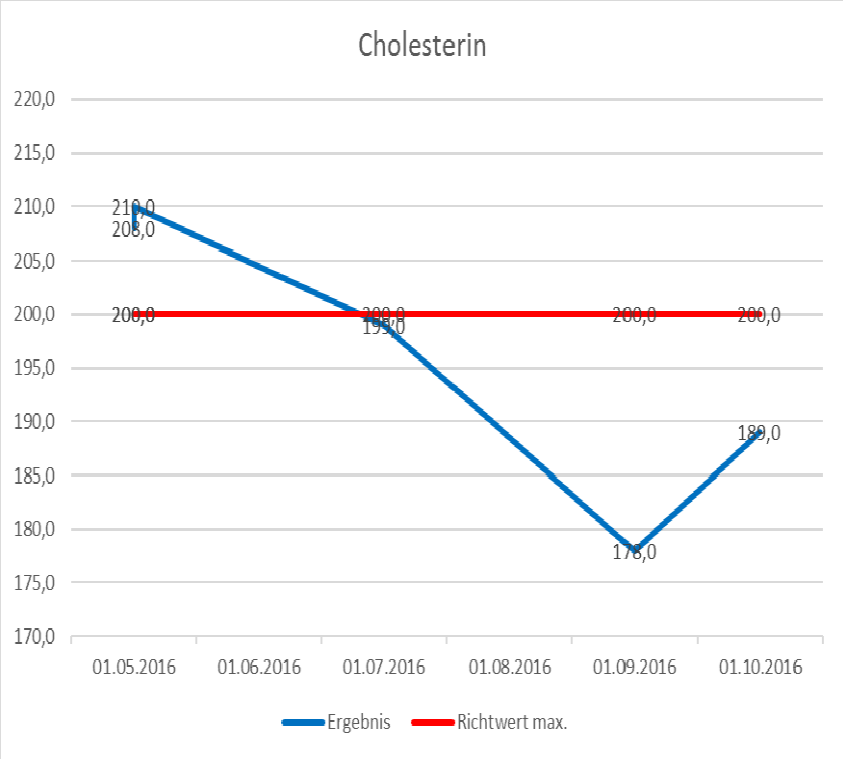
Patient, 62 years, male
Diagnosis: Diabetes Typ 2, Hypertension; regular therapy with Metformin 2 x 1000 mg, Candesartan 32 mg

Therapy with Laser Watch:
1) 3 month red laser watch
2) 3 months red-blue laser watch in combination with Curcumin (Ultracur+)

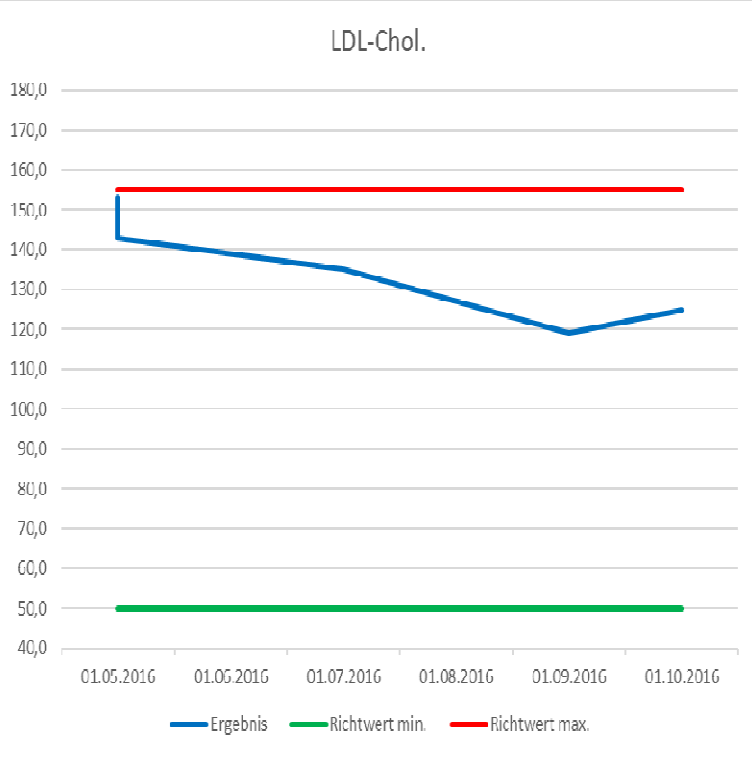


Studies (5): Diabetes (Case Report)

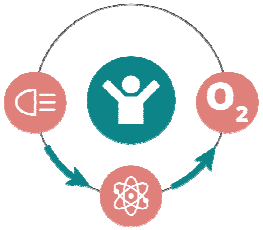
Cholesterol:



LDL-Cholesterol:



Photodynamic Effects:



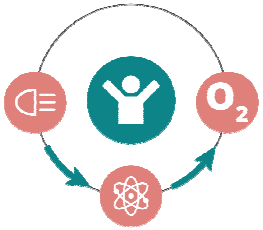
The laser watch can be combined with different light-sensitive supplements for achieving photodynamic effects, i.e. for additive cancer therapy, pathogen deactivation or prevention against cancer and infections.

Light-sensitive substances: Chlorophyllin, Curcumin (Turmeric), Hypericin (St. John's Wort), Phycocyanin

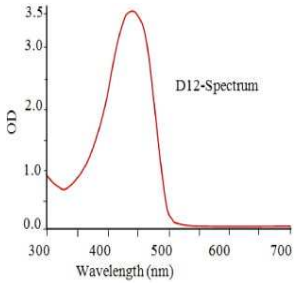
Effects:

- Prevention and treatment of metabolic diseases
- Prevention and treatment of inflammations and infections
- Prevention and treatment of autoimmune diseases
- Prevention and treatment of aging
- Prevention and support of cancer treatment

Photodynamic Effects:



UltraCur+



Curcumin with 15.000-fold increased bioavailability

- Curcumin absorbs blue light 447 nm
- Is a highly effective **Photosensitizer** for PDT for cancer, infectious and autoimmune diseases
- Is in low concentrations phototoxic, works a sonosensitizer, stimulates the immune system and has antitumoral, antimetastatic and antiangiogenetic effects

PhotoActive+

Chlorophyllin and Phycocyanin Complex

Photoactive+ is an intelligent food supplement made from natural plant extracts. It contains water-soluble chlorophyllin and liposomal phycocyanin.

Both substances can be activated by light for photodynamic effects.

Thank you!