Lasers Coming of Age:
21 Years of Enlightenment

Laser phototherapy – past, present and future
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1960 – the laser is born

Endre Mester

Disclosure:
Jan Tunér is co-owner of Prima Books, a part time venture selling LPT literature, mainly by his own pen. He has no commercial interests in any laser company.

The past

Medical pioneer McGuff dies at 85
Friday, Nov. 29, 2002 | 10:55 a.m.

Paul McGuff was a country doctor at heart. He made house calls and he once accepted jars of strawberry jam as payment for a patient.

But he was no simple country doctor. A man of high intelligence and deep thoughts, he made medical history in the early 1960s by using a laser beam to vaporize human cancer cells that had been transplanted into a hamster, paving the way for a technology that would save untold thousands of human lives.

“The historic rats”

Regrowth of fur
Mester used ruby 25 mW, HeNe 5-10 mW
Doses for wounds 1-4 J/cm²
Published in US journal in 1971


0.9 mW HeNe 632.8 mW

Published in US journal in 1971

The double blind studies

What's wrong with the literature?
1. Different protocols for energy, dose, wavelength, number of session, evaluation period, etc.
2. Lack of understanding about energy and dose
3. Lack of control of actual output

Mckibbin reports that there were about 1800 therapeutic laser units in Canada in 1990. 22% of them were HeNe lasers with an output of 1 mW or less, 35% HeNe lasers with 1.5 mW, 13% 830 nm units with an output up to 5 mW, 3% 830 nm units with an output up to 30 mW. 26% GaAs units with an output of 5 mW or less, and 1% units in the 760-780 range nm with an output up to 30 mW.


http://waltza.co.za/
There are now at least 125 randomized controlled trials investigating the pain-relieving effects of LLLT.

PEDRO database (physiotherapy) 2013

200 RCT:s

Recommended by
- American Physical Therapy Association: Achilles tendinopathy
- National Cancer Institute: cancer-therapy-induced oral mucositis
- Clinical Evidence at BMJ: epicondylitis

Some dental indications

Representative photomicrograph of control cultures of rat DRG neurons 3 days in culture showing nerve cell bodies and smooth axonal arrays.

Deumer J, 2013 n = 101


Salivary glands

Xerostomia

Trismus

Pollinosis
Lasers or LEDs?

Antibiotic resistance

Expansion of medical indications

The future

Combination with or substitute for NSAIDs and opiates

Drug resistant bacterias

Home care devices

Drug pandemic

Combination with or substitute for NSAIDs and opiates

NSAIDs, coxibs, glucosteroids

Combination with or substitute for NSAIDs and opiates
Haematoma In The Middle Of Lower Lip
G. Majlesi

Diabetes pandemic

Haematoma Drained

Rat aorta
Levon Gasparyan

Wound healing

Bisphosphonate-associated osteonecrosis of the jaw

End of marketing gimmicks:
- soliton waves
- scalar waves
- penetration scams
- Class 4 “technology”

Leg ulcer since 1991

Telomeres

Challenge of the future:
To define optimal dosage windows

Four months standing leg ulcer, expanding in spite of traditional therapy.

Requirements for success:
1. Better knowledge about reasonable parameters to be used in research
2. Requirements from journals to include these
3. At least one qualified LLLT reviewer per article

"We can talk to the cells, but we need to learn their language.”
Tiina Karu

The literature confirms: LLLT improves grip strength!


Annals of Laser Therapy Research
www.laserannals.com
www.tuner.nu