# LEDs Versus Laser

LEDs deliver enough energy to promote natural self-healing and pain relief. With the power output optimised to be most effective, LEDs provide a much gentler delivery of the same healing wavelengths of light as lasers but without the risk of accidental eye damage that lasers have.

LEDs are merely convenient devices for producing light at specific wavelengths and several studies established that it is the light itself at specific wavelengths and dosages that are therapeutic in nature rather than how the light is delivered.

## Quotes from published authors and laser scientists:

*"….. coherent and non-coherent light (i.e., both lasers and LED's) with the same wavelength, intensity and dose provides the same biological response."*

**Tina Karu; Cellular Mechanisms of Low Power Laser Therapy**

*"Lasers (and LED) Therapy is Phototherapy. LEDs and Lasers provide the same therapeutic benefits. Lasers are not magical; it is the light they produce that yields the biological effects."*

*"Lasers are just convenient machines that produce radiation; it is radiation that produces the biological and / or photo physical effects and therapeutic gains, not the machine."*

**Kendric C. Smith; The Photobiological Basis of Low Level Laser Radiation Therapy. Department of Radiation Oncology, Stanford University School of Medicine**

*"In this view, laser therapy is really a form of light therapy, and lasers are important in that they are convenient sources of intense light at wavelengths that stimulate specific physiological functions."*

**Jeffrey R. Basford, M.D., Department of Physical Medicine and Rehabilitation, Mayo Clinic, Rochester,**

**Minnesota. Low-Energy Laser Therapy; Controversies and New Research Findings**

*"…the formerly most common used He-Ne laser emitting red light at 632.8nm is being replaced more and more by cheaper (partially non-coherent) diodes with wavelengths between 660 and 940nm. Results from recent cell culture studies… showed no difference in the biological responses to irradiation with (coherent) laser light and non-coherent light.*

*"Therefore, among the characteristics of laser light, coherence seems to be of only minor importance, which means that lasers simply represent handy monochromatic light source"*

**Andrea Schindl, et al., University of Vienna School of Medicine, Vienna Austria.**

**(J.Invest Med 48:312-326,2000).**

"….we lack the scientific evidence needed to support the assertion that coherence plays a role in producing the benefits derived from therapeutic light."

"The therapeutic effect of light depends on wavelength and dose. The coherence advantage of laser diodes is lost in tissue because the light is "scattered" as it passes through tissue."

All biological systems have a unique absorption spectrum that determines which wavelengths of radiation will be absorbed to produce a given therapeutic effect. The visible red and invisible infrared portions of the spectrum have been shown to have highly absorbent and unique therapeutic effects on living tissue.

LEDs allow the light beam to spread out instead of being a pinpoint light beam. The wide-angle diffusion of the LED confers upon it a greater ease of application, since light emissions are thereby able to penetrate a broader surface area and this results in a faster treatment time for a given area than laser.

| **Advantages of LEDs** | **Advantages of Lasers** |
|---|---|
| Less invasive, safer<br><br>Body is evolutionarily programmed to respond to incoherent light – can transform into coherent light internally<br><br>Greater choice of colours<br><br>Lower cost<br><br>May be used for whole-body or point treatment<br><br>Suitable for acute and chronic conditions | Coherent – more focused, penetrates well into the body<br><br>Greater body of research available on laser acupuncture |
| **Disadvantages of LEDs** | **Disadvantages of Lasers** |
| Less precise wavelengths | Invasive – may blow out acupoints over time<br><br>Unnatural stimulation to the body<br><br>Less choice of colours<br><br>Much higher cost<br><br>Not suitable for whole-body treatment<br><br>Eye hazard |

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**Laser and LED Treatments: Which is Better?**
*By Darren Starwynn, OMD, LAc*