



LIGHT THERAPY IN VETERINARY PRACTICE

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Many veterinary clinicians around the world are having great success using light therapy on small animals, cattle, wildlife and horses. Today more and more vets, physiotherapists and equestrians in South Africa are turning to the healing benefits of light therapy to speed-up healing (up to 60% faster), shorten recovery time, minimize scar tissue and proud flesh formation, reduce swelling and bruising and to offer a non-invasive, safe and natural approach to pain control.

Clinicians are mostly familiar with devices termed as low level laser therapy or laser based light therapy. Lasers, however, have some inherent characteristics that make their use in a clinical setting problematic; mainly limitations in beam width, heat generation; high cost, and fragility. The size of wounds and areas that can be treated is limited because of time constraint, heat production from the laser light itself can damage tissue, and the pinpoint beam of laser light can damage the eye (protective eyewear has to be used by the patient and therapist).

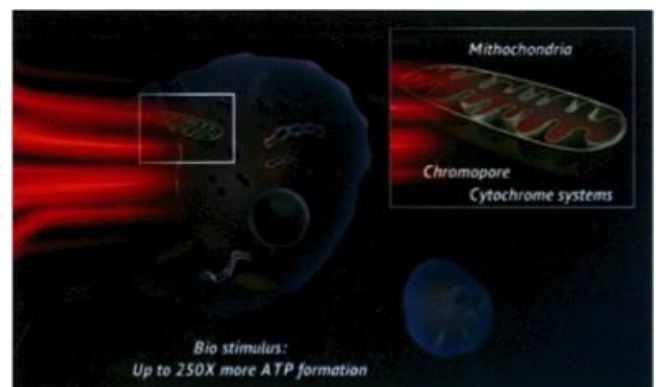
The modern LED based light therapy devices offer an effective alternative to lasers. These diodes can be configured to produce suitable wavelengths that produce a more diffuse light so that larger areas can be treated at a time. The diodes are very robust, lightweight, and produce virtually no heat. Light therapy has the advantage that the patient does not feel any sensation from the treatment, resulting in greater patient compliance. Increasing numbers of clinical studies have shown that many conditions are

effectively treatable using high intensity LED arrays, and the list of research and treatable conditions is growing steadily.

The application of light therapy in veterinary care in South Africa is very new, but is increasing steadily as more and more veterinary clinicians are learning about the advantages of using light therapy when treating patients.

How does it work?

Light therapy (laser and LED based) stimulates the basic energy processes in the mitochondria (energy compartments) of each cell, particularly when near-infrared light is used to activate the wavelength sensitive constituents inside (chromophores, cytochrome systems). Optimal light wavelengths (proven in prior studies of laser and LED light) for speeding up wound healing rates lie in the range between 600 nm and 1000 nm. LED-based devices can produce these wavelengths accurately.



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Light therapy provides low-energy stimulation of tissues by lasers or LED-based light therapy devices, which results in increased cellular activity during wound and tissue healing in such tissues. These activities include collagen production and angiogenesis. It has also been demonstrated that the mitochondria are receptive to near-infrared light and that light increases respiratory metabolism of cells. Light therapy can also be regarded as a complementary/

extra treatment modality that will greatly enhance the effectiveness of conventional treatment modalities used in practice. The major advantage of LED Light Therapy is that it is practical, easy to use, lightweight and portable, effective, affordable and durable/robust. The mechanism on which light therapy works complements traditional treatment plans in acute and chronic conditions due to the following effects seen in patients:

ATP stimulation	Stimulation/regulating of DNA and
Stimulation/regulation of the immune system	Analgesic effect (acute and chronic)
Strong anti-inflammatory effect	Reduced scar/proud flesh formation
Cell repair if treated within 4-6 hours of injury.	Regeneration of skin, nerve, muscle, and bone cells, etc.
Reduced muscle spasms and trigger point release	Increased blood supply
Increased lymph vessel diameter	Detoxifying effect

A few case studies to demonstrate Light Therapy's effectiveness

1. 8 week old puppy:

Left: after the debridement of severe skin necrosis, sloughing of the skin and subcutaneous tissue.

Right: 12 days later after 8 Light therapy treatment.
Note: no excess scar tissue

(Case study by Mayville animal clinic, Pretoria)



2. Cat presented with necrosis after owner tied the bandage with a dental elastic band:

Left: presenting necrosis

Right: 48 Hours later after 2 light therapy treatments

(Case study by Mayville animal clinic, Pretoria)



3. 9 year horse with swelling and pain between the front limbs.

Left: Swelling

Right: No swelling or pain after 4 Light therapy treatments

(The Photizo Light therapy device was used in all the above case studies)

