

CLASS IV LASER THERAPY

– the **hot** technology of 2011



by John C. Godbold, Jr., DVM

Light energy can produce a significant healing change in an animal's tissues.

Veterinary medicine is buzzing about the success of Class IV therapy lasers. Over 3,000 practices report clinical and economic success with a technology that was unheard of five years ago.

Laser therapy uses electromagnetic energy interacting chemically and biologically with tissue to produce “photo-bio-stimulation” or “photo-bio-modulation”. Light interaction with tissue is not a novel concept: electromagnetic energy stimulates photosynthesis, and induces vitamin D formation in human skin cells.

The medical use of light – photons, small packets of electromagnetic energy – interacting with

tissue is also not novel. Ancient Greek physicians noted that some skin conditions responded to exposure to sunlight. Thousands of years later, their observations have been refined; we now more fully understand that photonic energy can produce significant change in tissue. We now appreciate the value of photo-bio-modulation.

Since the Federal Drug Administration approved Class IV therapy lasers in the United States in 2005, the science of laser therapy has developed rapidly. Acceptance has been seen on the human side in physical therapy, rehabilitation, wound care and sports medicine programs. In the veterinary profession, Class IV laser therapy use has grown

more rapidly, with practitioners leading the way in testing, protocol development, case reporting, and dissemination of information about the technology.

What can Class IV laser therapy do?

It reduces pain and inflammation, and accelerates healing, all in a non-invasive and non-pharmacological way. Symptoms often improve within the first few treatments. Acute conditions are treated until resolution, while chronic conditions are treated until improvement is noted, then treated with reduced frequency to maintain the effect.

- **Class IV laser therapy** works to decrease pain perception through its effect on nerve cells and nociceptors, by increasing stimulation thresholds, reducing neuronal impulses, and increasing the release of tissue endorphins.
- **Inflammation is reduced** by decreasing the release of prostaglandins and inflammatory mediators, increasing macrophage activity and leukocytic phagocytosis, and by reducing edema through dilation of the lymphatic vessels and activation of the lymph drainage system.
- **Healing is accelerated** by increased blood flow from vasodilation, increased angiogenesis and capillary production, increased release of pro-healing cytokines, and the stimulation of fibroblast activity and collagen production.

Laser therapy is used as an adjunct to traditional treatment modalities and pharmacological agents, with medications being reduced in many cases. Although not a panacea, and not effective for every patient and condition, most patients with pain, inflammation or healing tissue are candidates for Class IV laser therapy.

Good for acute and chronic conditions

Many practices incorporate the use of Class IV laser therapy into routine protocols after surgery and dental procedures to reduce post-procedure pain and inflammation. Single treatments are administered immediately after routine procedures with moderate tissue disruption, like elective surgeries. Procedures resulting in greater tissue disruption, like orthopedic surgeries, are treated immediately post operatively and then every other day for four to six treatments.

- **Patients with a wide variety of acute problems** can benefit. Common among these problems are the

components of pain, inflammation and tissue healing. These conditions may be treated only once or multiple times over several days or weeks, depending on the severity of the condition. Examples include wounds, fractures, abscesses, anal sacculitis, acute otitis, hematomas, sprains, strains, muscle discomfort, cystitis, urethritis, injection site soreness, pyotraumatic dermatitis, venomous bites and pododermatitis.

- **Chronic conditions involving pain**, inflammation and healing may also be helped, although treatment has to extend over a longer time, and will be followed by ongoing treatment to maintain effect. Osteoarthritis, elbow hygromas, lick granulomas and neuropathies are examples. Chronic conditions are treated through an initial Induction Phase of treatments until a clinical response is noted. Patients then are treated through a Transition Phase of gradually reduced frequency of treatment, to establish the frequency that will maintain effect. They then enter a Maintenance Phase of treatment every three to six weeks.

How are patients treated?

Technician administered treatments take two to ten minutes for each affected area. The laser handpiece is moved in a

Equine applications

If you include equine patients in your practice, you know muscle and tendon injuries are common, especially among performance animals. You also know these injuries can end a horse's career if not treated promptly and properly.

Laser therapy is playing a growing role in equine veterinary practice as a way to heal athletic injuries on a cellular level. It can be used for a variety of problems, including muscle soreness and fatigue, navicular disease, bone spurs, ligament injuries and more. Because it hastens healing, patients can often return to competition within a few weeks rather than a few months. Look for more information in a future issue of *IVC*.



scanning motion, either close to or in light contact with the tissue. Patients tolerate treatments well, often relaxing as the therapy is administered.

Human patients report a gentle warming sensation in the area being treated. (An increase in local tissue temperature is not considered a therapeutic benefit, but it is comfortable!) Studies demonstrate tissue endorphins are released during laser therapy treatment. Whether the released endorphins have a systemic effect has not been documented. Regardless, a common observation is that veterinary patients, even fractious ones, tend to relax and become calmer during treatment.

Treatments are designed to deliver a specific dose of energy. The dose is a measure of the amount of energy delivered to an area of tissue, expressed in Joules per square centimeter (J/cm^2). Established target doses are three to four J/cm^2 for superficial tissues (those that can be seen), and eight to ten J/cm^2 for deeper tissues (those that cannot be seen). Target doses have been developed through numerous studies determining the optimal dose for tissue response, and the use of tissue power meters measuring the percentage of penetrating photons reaching target tissue.

What are practitioners reporting?

With so many practices using Class IV therapy lasers, the volume of reports is substantial. The growing list of conditions being treated with success results from practitioners applying the simple concept of reducing pain and inflammation and accelerating healing. With a good understanding of the etiology of health conditions, and of the effects of laser therapy, practitioners are demonstrating that a wide diversity of problems respond to laser therapy.

While the treatments are not hot – again, patients experience only a pleasant, gentle warming sensation in their tissues – the technology certainly is. As more and more practices begin enjoying the patient benefits and financial success of Class IV laser therapy, it will surely continue as the hot technology of the decade! **IVC**



Dr. John C. Godbold, Jr., DVM, graduated from Auburn University School of Veterinary Medicine in 1978. In 1980, he established Stonehaven Park Veterinary Hospital in Jackson, Tennessee where he practices full time as a small animal practitioner. Since 1999, Dr. Godbold has pursued a special interest in surgical lasers and the use of other laser modalities in small animal practice. He has extensive experience with surgical and therapeutic lasers, has developed new surgical and therapeutic techniques, and assists equipment manufacturers with the development of new laser and laser associated technologies. Dr. Godbold is a member of the Medical Advisory Board of the American Institute of Medical Laser Applications and published the *Atlas of CO2 Laser Surgery Procedures* and the *Atlas of Class IV Laser Therapy – Small Animal*.

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