

medlaser

M E D I Z I N T E C H N I K U N D I T

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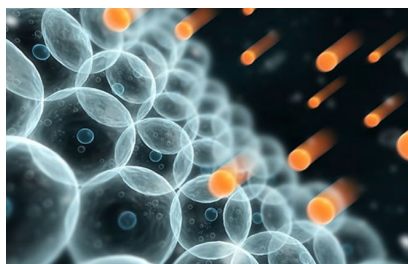
PhotoBioModulation-Therapy: biological Effects

Lightforce[®]
therapy lasers

COMPANION
ANIMAL HEALTH

PEGASUS
THERAPY LASERS

The effectiveness and efficiency of PBMT has been proven in over 8,000 studies. Here you can find the biological effects that the light photons trigger in the body/tissue:



Reduce Inflammation

PBM has an anti-inflammatory effect and increases inflammatory mediators such as macrophages, neutrophils and lymphocytes, which accelerate and resolve the inflammatory process. Research has demonstrated the effect on reducing pro-inflammatory cytokines such as interleukin-1. At the same time, PBM has been shown to reduce levels of harmful free radicals by increasing levels of superoxidase dismutase (SOD). This helps to control painful inflammation by targeting the cells and enzymes that cause inflammation.



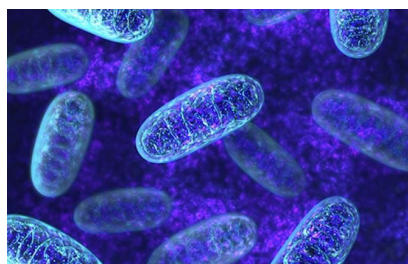
Long-lasting Pain Relief

PBM offers analgesic (pain-relieving) benefits. It decreases nerve sensitivity by reducing bradykinin, a chemical that triggers pain. It normalises ion channels (cellular gatekeepers) and releases endorphins and enkephalins from the brain and adrenal gland, which have an analgesic effect. PBM also has an analgesic effect on certain nerve fibres and reduces the sensitivity of the nerves.



Improvement of Vascular Activity

PBM has a haemostatic effect and causes the blood and lymph vessels to dilate in a process called vasodilation. In the treated area, a process of angiogenesis occurs, i.e. the growth of new small blood vessels. This improves the supply of nutrients to the injured area and promotes the removal of waste products from dead or damaged cells. The improvement in drainage through the lymphatic vessels and veins also contributes to the removal of excessive swelling.

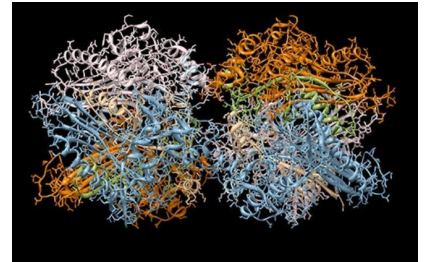


Increase Metabolic Activity

PBM causes a higher output of specific enzymes, a higher oxygen and food particle load of the blood cells. This results in the cells being supplied with energy and the right molecules being stimulated in the target areas, while tissue oxygenation, ATP (adenosine triphosphate) synthesis and intercellular exchange are increased. This process increases the available energy so that the cell can absorb nutrients faster and get rid of waste products. As a result, the cells of tendons, ligaments, nerves and muscles are repaired more quickly.

Immune Regulation

PBM has a direct effect on the immune system by stimulating the production of immunoglobulins and lymphocytes. The laser energy is absorbed by chromophores (molecular enzymes) that react to the laser light. The enzyme flavanone nucleotide is activated and triggers the production of ATP. ATP is the cell's most important energy carrier and the energy source for all chemical reactions in the cell.



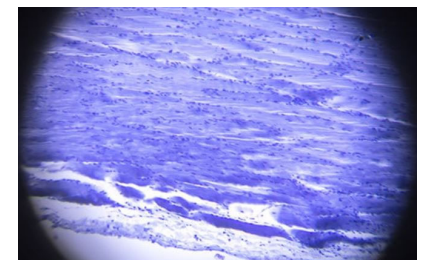
Improvement of Nerve Function and Regeneration

PBM increases the proliferation of growth factors that promote neuronal sprouting and myelin formation for optimal nerve recovery. The nerves allow the brain to communicate with the body and the body to communicate with the brain. When your body is in pain, especially chronic pain, the nerves also stop functioning. Slow recovery of nerve function in damaged tissue can lead to numbness and other limb impairments. PBM helps to improve the transmission of nerve signals and accelerate the process of cell reconnection, increasing the amplitude of action potentials to optimise muscle function.



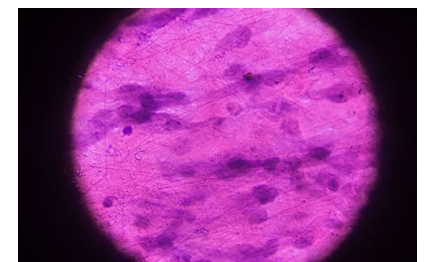
Muscle Tissue Repair and Regeneration

PBM penetrates deep into the tissue and stimulates new cell formation and cell growth, which leads to the repair of damaged muscle fibres and the activation of myogenic satellite cells that cause the regeneration of muscle tissue.



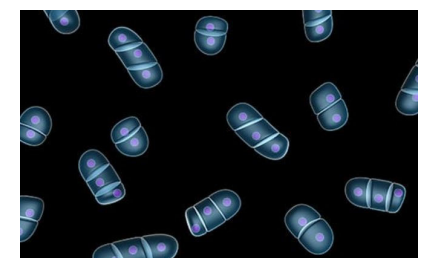
Reduced Formation of Scar Tissue

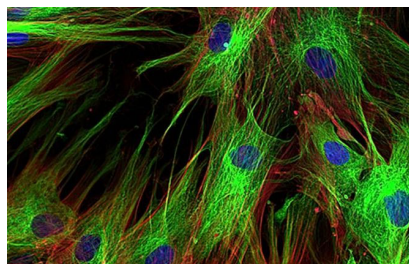
PBM increases collagen production, which allows for proper collagen alignment and remodelling, reducing the formation of scar tissue after tissue damage from repetitive motion, cuts, scrapes, bumps or surgery. Early treatment can prevent the formation of scar tissue, which is beneficial for torn ligaments, tendons or muscles or after surgery. The less tissue is scarred, the less chronic pain there is, which is often associated with scarring.



Increase in Cartilage Production

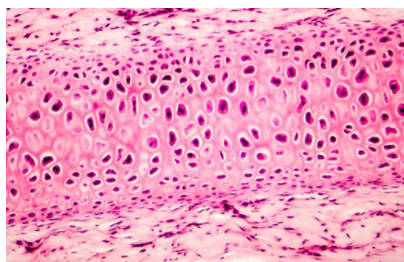
PBM causes an increase in chondrocyte and collagen production. This enables improved cartilage deposition and joint function.





Accelerate Wound Healing

PBM stimulates the development of fibroblasts in damaged tissue. Fibroblasts are the building blocks of collagen, which is predominant in wound healing. Collagen is the essential protein needed to replace old tissue or repair tissue. It also increases the strength of the new tissue (better elasticity), which protects against further degradation or tissue damage.



Accelerate Bone Repair

PBM promotes the proliferation of osteocytes and the remodelling of the extracellular bone matrix, which leads to accelerated bone repair.



Stimulate Trigger and Acupuncture Points

PBM is effective in eliminating painful trigger points. It is also another treatment option for stimulating acupuncture points without the discomfort associated with needling.



Resolve Acute and Chronic Pathologies

Both acute and chronic pathologies respond well to the photochemical mechanism of action of photobiomodulation and are often cured or managed, leading to a significant improvement in quality of life.

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We are representatives and laser safety officer (DACH) of the Lightforce, Companion and Pegasus devices from «enovis» in CH & FL.