



The Effect of Low-Level Laser on Increasing Platelet and T Lymphocyte Immune Systems in Patients with (COVID-19)

Ehsan Kamani^{1,2*} and Zahra Kamani³

¹University of Medical Sciences, Arak, Iran

²British Medical Laser Association (BMLA), Iran

³Islamic Azad University Arak Branch, Arak, Iran

*Corresponding Author: Ehsan Kamani, University of Medical Sciences, Arak, Iran.

E-mail: E110_k@yahoo.com

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A virus is a small parasite that cannot reproduce by its own. Once it infects a susceptible cell, however, a virus can direct the cell machinery to produce more viruses. Most viruses have either RNA or DNA as their genetic material. The nucleic acid may be single or double-stranded. The entire infectious virus particle, called a virion, consists of the nucleic acid and an outer shell of protein. The simplest viruses contain only enough RNA or DNA to encode four proteins. The most complex can encode 100 - 200 proteins. Since many viruses can infect a large number of different cell types, genetically modified viruses often are used to carry foreign DNA into a cell. This approach provides the basis for a growing list of experimental gene therapy treatments.

These viruses were originally transmitted between animals and people. SARS, for instance, was transmitted from civet cats to humans while MERS moved to humans from a type of camel. Several known corona viruses are circulating in animals that have not yet infected humans. The name corona virus comes from the Latin word corona, meaning crown or halo. Under an electron microscope, the image of the virus looks like a solar corona.

Scientists are concerned about a new virus that has infected tens of thousands of people and killed more than 2,000. The virus, which emerged in the Chinese city of Wuhan in December, is a coronavirus and belongs to the same family as the pathogen that causes severe acute respiratory syndrome, or SARS. It causes a respiratory illness called COVID-19, which can spread from person to person.

Coronaviruses are a large family of viruses that can make humans and animals sick. They cause illnesses that can range from the common cold to more severe diseases. Coronavirus (COVID-19)

is a respiratory illness caused by a new virus. Symptoms range from a mild cough to pneumonia. Some people recover easily, others may get very sick very quickly. There is evidence that it spreads from person to person [1].

Laser treatment is one of the non-invasive treatments. The current medical world needs these treatments because they prevent the effects of invasive treatments. Meanwhile, laser science has advanced very well due to the properties of laser beams. One of the branches of laser is low power laser therapy. Low-power laser therapy is a treatment that uses low-intensity light radiation in the range of 830 - 540 nm. The therapeutic effects of this method appear to be due to photochemical reactions that alter the permeability of the cell membrane and subsequently increase the rate of mRNA and cell proliferation. Following the irradiation of laser photons into the cell, the cellular response begins with the activation of photoseptors in the respiratory chain located in the mitochondria, thereby altering the cellular redox and altering the cell membrane modification by calcium transfer and pH changes and activation. CAMP and DNA duplication lead to protein synthesis. In this way, cellular responses are drawn from the cellular surface to the tissue and organ surface and have effects such as anti-inflammatory, anti-edema and swelling, painlessness, cell proliferation, neovascularization and acceleration of repair, metabolic shift to aerobic and balancing the immune system. It comes from. In general, the physiological response of tissue for low-power lasers includes the following: biological system stimulation, effect on the immune system, anti-inflammatory and anti-edematous effect, effect on blood vessels and circulation, effect on lymph, effect on wound healing, analgesic effect and effect on nerves.

There are two types of lasers: low power and high power. High-power lasers remove tissue and release heat, but low-power lasers do not release heat and cause tissue damage, but low-power lasers have the property of causing photosynthetic reactions and improving cellular metabolism, since their density Less than 0.5 watts per square centimeter, they are called cold lasers or soft or soft lasers. These lasers react with tissue and stimulate or inhibit the cell without causing heat [2].

Previous reports have shown that cellular functions are affected by visible light (400 - 700) nanometers. However, the biological effects of the mechanisms created by visible light are being investigated. The low-power laser has access to the underlying biodiversity of cellular cultures and animal models. At the cellular level, low-power laser radiation can have significant biological effects, including cell proliferation, collagen synthesis, and the release of growth factors from cells. The low-power laser with its direct radiation effects causes biological changes but does not produce heat [3].

In a 2007 study by Ping Ho., *et al.* On the effect of helium neon laser on cell proliferation, they found that laser-helium-neon radiation caused optical arousal effects in mitochondrial processes, including JNK/AP-1 activation and increased growth factor release. Eventually, cell proliferation becomes A2058 [3].

In a 2009 study by Dr. Gavu and Zing on the effect of low-power lasers on cell proliferation, they found that LPLI synthesizes or releases many molecules, such as growth factor, interleukins and inflammatory cytokines [4].

In a study by Dr. Al-Mousavi., *et al.* On the effect of low-power lasers on human blood lymphocytes in 2016, the results clearly showed that the counting of NK cells was altered by radiation, which ultimately affected a wide range of lymphocytes [5].

Value of lymphocytes and platelet levels can be used as sensitive indicators to reflect the body's infection and inflammation control [6].

Conflict of Interests

The authors declare no conflict of interest.

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