



Marta Moidlová, M.D.

Soft Laser in Cosmetics

Marta Moidlová, M.D.

*Chief surgeon of LaserPlastic
Clinic of laser-aesthetic dermatology
and plastic surgery, Prague*

Introduction

High-power lasers are frequently utilized in dermatology. There are able to ablate wrinkles, repair scars, remove pigmented lesions and age or sun spots, rid of unwanted tattoos and hairs. Some of the applications do not even have a non-laser alternative, such as permanent hair removal or elimination of naevus flammeus. However, apart from those, there is another group of lasers, called soft lasers (a name very appropriate for cosmetics), or therapeutic, biostimulation, low-level lasers (low-level laser therapy – LLLT), and those will be the subject of this article.

Mechanisms of soft lasers

Laser energy in tissue is absorbed through cytochrome cells. In mitochondrial apparatus of individual cells light energy turns into cellular energy. At the same time permeability of cellular membrane is increased by light passage, which leads to their better nourishment, improved function and faster fission. These processes then activate macrophage in the tissue, which is responsible for absorption of harmful substances. On the other hand it activates healing processes that increase activity of fibroblast – fibrous cell supporting synthesis of collagen in the tissue and they cause increased formation of specific enzymes. Laser beam is beside growth stimulation and healing also used for its other features in medicine, such as ability to reduce pain by influencing nerve endings,

anti-inflammatory effect or stimulation of acupuncture or physiological trigger points.

Choice of suitable soft laser for cosmetics

In cosmetics it is also important to choose the right device. It is essential to decide for suitable wavelength of radiated light, or its color. There is a rule that red color (632-670nm) is suitable for superficial applications, it does not penetrate into depth and all the energy is radiated in the epidermis and dermis. On the other hand infrared lasers with large depth of penetration that are used for example in massaging, rehabilitation are almost useless in cosmetics. Second important feature is laser power, which should be in range from 10-40mW for cosmetics. Lower power requires disproportional prolongation of application time for radiation of needed dosages, red lasers with higher power are usually very expensive. Third important thing when getting new laser is a construction of radiation output. You can get laser with hand point probe, which you will appreciate by precise treatment of small areas (see Fig.1). During work with the probe you are permanently in contact with the client. If you treat larger areas, you will prefer laser scanner, which automatically radiates chosen area and frees your hands for other job (see Fig.2). We recommend laser with the option of automatic setting parameters for treatment, which will make your work easier.



Soft laser applications in cosmetics

1) Healing of inflammatory and other pathologies

Acne – one of the most frequent cosmetic problems, due to civilization impacts shifting more and more into middle age. Laser helps effective healing of papules and pustulae even after a few applications, in most cases skin responding to laser treatment spontaneously and very quickly.

Alopecia – supportive treatment of alopecia, hair growth stimulation and improvement of quality.

Dermatitis – LLLT helps to improve inflammatory and other conditions on the skin.

Eczema – laser can improve quality of life of the patients by diminishing some of the superficial manifestations of the disease.

Herpes – one of the most effective applications. A herpes usually does not even appear if the painful spot is irradiated before eruption, or has a relatively mild symptoms. In other cases a scab can be expected to create on the herpes within a few hours after irradiation, avoiding unpleasant long lasting suppurative manifestations. LLLT shortens healing by more than fifty per cent, and is also suitable to treat post-herpetic neuralgia.

2) Post-procedure applications

Healing of nail matrices – successful treatment also after nail design applications.

Post cleansing treatment – quicker regeneration of skin suffering from red spots, minor edemas and haematomas, open and widened pores.

Post epilation treatment – application of LLLT after wax or electric epilation significantly soothes irritated skin, healing up punctures in rather a short time. It is

recommended to stimulate the area to be treated not only after the application, but also before the initial hair removal, due to analgetic effect of laser light, as well as due to more effective start up of healing processes.

Permanent make-up – after mechanical penetration of pigments under the skin LLLT regenerates microscars, soothing irritated skin.

3) Scars management

Post acne scarring – a long term treatment helps to improve the final condition.

Scars – LLLT contributes to decolorization, smoothening and softening scars.

Striae – regeneration of unwanted microscars and rhagades in skin.

4) Improving the beauty of clients

Biostimulation of skin – overall soothing of the skin, improvement of its look, LLLT smoothenes and stretches the skin removing its minor defects.

Cellulites – laser should be understood as one of the components of comprehensive treatment, LLLT improving microcirculation of lymph and blood, locally decreasing the feeling of pressure and pain, releasing collagen threads.

Dandruff – LLLT can help in combination with special anti-dandruff shampoos.

Laser Mask – application of a face mask, the performance of which is activated by irradiation with a laser beam, a combination of deep cleansing of tissue with biostimulation.

Rejuvenation – improving the looks, smoothening and tightening of the skin.

Wrinkles – soft laser is not able to rid of the wrinkles mechanically, however by improving the condition of the skin it contributes to its increased flexibility and elasticity.



Figure 1: Treatment with a laser probe



Figure 1: Treatment with a laser scanner