STRESZCZENIE W JĘZYKU ANGIELSKIM

Summary

Gluconolactone is a polyhydroxy acid and an oxidized derivative of glucose. It exhibits multidirectional effects on the skin. Due to its structure, it combines the properties of AHA and glucose – effectively reduces water evaporation from the epidermis, moisturizes, soothes irritation, and exhibits comedolytic, anti-inflammatory, and antioxidant properties. Gluconolactone can be used in combination with other chemical peels, microdermabrasion, microneedling. It is currently used in cosmetic preparations for dry, dehydrated, and acne-prone skin.

Oxybrasion is one of the microdermabrasion technique. This is a procedure for superficial exfoliation of the epidermis, during which a two-phase jet consisting of saline solution and compressed oxygen is applied to the skin using a special head. Oxygen microdermabrasion stabilizes the sebaceous glands, reduces the number of anaerobic bacteria, and also has a moisturizing, anti-inflammatory effect, stimulates and increases blood circulation, resulting in better nutrition, oxygenation, regeneration and relief of skin inflammation.

The study evaluated the effect of gluconolactone in the form of chemical peel and oxygen microdermabrasion on selected parameters of facial skin, including hydration, sebum level, transepidermal water loss, and pH. Objective evaluation of the effectiveness of cosmetological treatments, is an important source of knowledge regarding the methods used. In order to optimize the achievable results, we decided to perform the oxybrasion procedure as a stand-alone procedure, apply gluconolactone in two concentrations, and use a combined treatment involving both procedures. A comparison of efficacy was also made with another commonly used method, micro-needle mesotherapy which is used to increase penetration of the active substance through the skin. There are few literature data on studies have investigated the effects of oxybrasion and gluconolactone on the skin.

The study included 64 female subjects aged 31 and 70 years. The subjects were divided into three groups. A series of treatments were performed out in all subjects. Twenty-seven women underwent oxybrasion treatment for the entire face, sixteen participants underwent split-face treatments consisting of gluconolactone application in two concentrations (10% and 30%), and the last group of twenty-one subjects underwent combined treatments consisting of oxybrasion and gluconolactone application on one side of the face and micro-needle

mesotherapy with gluconolactone application on the other side of the face. The effectiveness of the treatments was evaluated using a Corneometer®, pH-meter® and Tewameter® probes Sebumeter® cassette - The Multi Probe Adapter Systems (Courage + Khazaka electronic GmbH, Köln, Germany).

Objectives of the study:

1) Instrumental evaluation of the effect of oxybrasion on hydration, sebum levels, pH, and TEWL.

2) Comparative evaluation of the effects of 10% and 30% gluconolactone in the form of a chemical peel on hydration, sebum levels, pH, and TEWL.

3) Comparative evaluation of split face treatment involving oxygen microdermabrasion and application of 10% gluconolactone to one side of the face, micro-needle mesotherapy and application of 10% gluconolactone to the other side of the face. Skin parameters, such as hydration, sebum levels, pH, and TEWL were studied.

The following conclusions were drawn from this study:

1) A series of oxygen microdermabrasion treatments significantly improved hydration, restores the skin's acidic pH of the skin and normalizes sebum secretion.

2) A series of treatments with gluconolactone chemical peel resulted in improved hydration, reduced TEWL and lowered skin pH. The treatments had no significant effect on the sebum level of the stratum corneum.

3) There were no statistically significant differences between 10% and 30% gluconolactone. Both concentrations tested showed a significant improvement in hydration, a decrease in skin pH and a reduction in transepidermal water loss.

4) Split face treatments involving a combination of gluconolactone with oxybrasion or with micro-needle mesotherapy were associated with improved hydration, decreased skin pH, decreased transepidermal water loss and decreased sebum secretion.