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Clinical and instrumental evaluation of skin improvement after treatment with a new 50% pyruvic acid peel.

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Abstract

BACKGROUND: Pyruvic acid is an alpha-keto acid that presents keratolytic, antimicrobial, and sebostatic properties as well as the ability to stimulate new collagen production and elastic fibers formation. Because of its low pKa and its small dimension, it penetrates rapidly and deeply through the skin, so far as to be considered a potent chemical peel agent. It has proven its efficacy for the treatment of many dermatological conditions such as acne, superficial scarring, photodamage, and pigmentary disorders. Pyruvic acid application usually induces intense burning, and the postpeeling period is characterized by erythema, desquamation, and, sometimes, crusting.

OBJECTIVE: The aim of the study is to assess the efficacy and tolerability of 50% pyruvic acid in a new non-erythemagenic formulation (pyruvic acid 50%, dimethyl isosorbide, propylene glycol, ethyl alcohol, dimethyl sulfone, ethyl lactate, water) for the treatment of photodamage, superficial scarring, and melasma.

MATERIALS AND METHODS: Twenty subjects affected by photodamage, superficial scarring, and melasma, but otherwise healthy, entered the study. Four peeling sessions were performed once every 2 weeks. The patients were evaluated clinically and by means of several noninvasive methods in order to monitor the following parameters: hydration, color (erythema and pigmentation), elasticity, skin smoothness, skin roughness, scaliness, and wrinkles.

RESULTS: The patients did not report any discomfort either during the peeling session or during the postpeeling period, without any impact on their social life. We did not observe any case of persistent erythema as well as any case of postinflammatory hyperpigmentation. Instrumental evaluations showed a significant reduction in the degree of pigmentation in patients with melasma, a significant increase in skin elasticity, and an improvement of the degree of wrinkling in all the patients.

CONCLUSION: This innovative formulation of 50% pyruvic acid peel has been shown to be safe and effective to treat photodamage, melasma, and superficial scarring, allowing the patients to carry out regularly their working life as well as their social life. Furthermore, the results have been evaluated by means of noninvasive devices, which have permitted one to quantify the improvements.

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