Pyruvic acid

Pyruvic Acid is an α-hydroxy acid that has gained significant attention in the recent years due to its keratolytic, antimicrobial and sebostatic properties, as well as its ability to stimulate the formation of new collagen and elastic fibers.

Peeling effect

Pyruvic Acid is physiologically converted to lactic acid, and its properties make it a particularly effective topical exfoliating agent, with a low risk of scarring. Pyruvic acid causes separation of the dermis and epidermis, and increases the production of collagen, elastic fibers and glycoproteins. In addition, its **antimicrobial and sebostatic activity** have been proven, and that, added to its keratolytic and desmoplastic properties, make its use suitable in patients with **inflammatory acne**, moderate acne scars, oily skin, actinic keratosis, and warts (1).

It is not only useful for acne, photo-damage, and superficial scars, but it has also shown benefits in various pigment disorders in fair-skinned patients.

Peeling is one of the oldest and most popular cosmetic procedures in the world. Superficial chemical peelings are defined by the application of one or more agents on the skin with the aim of a slight peeling. Alpha-hydroxy acids (AHAs) are a group of organic compounds extracted from fruits and sugar cane that have a hydroxyl in the alpha position (1).

Anti-aging effect

Its efficacy as an anti-aging agent has been demonstrated (Figure 1) (3). After 21 days of cosmetic application on the skin with **pyruvic acid**, a great reduction in both the depth of the wrinkles and the roughness of the skin is observed.

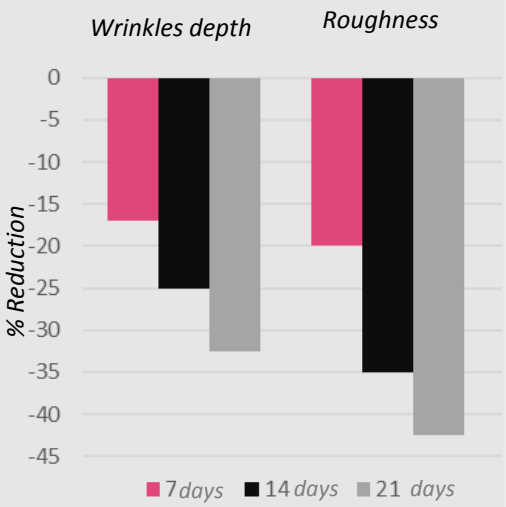

Figure 1. Reduction of the depth of wrinkles and roughness of the skin after 7 and 21 days of treatment with pyruvic acid. (3)

Skin aging is the result of both intrinsic aging due to the passage of time, and a consequence of environmental damage mainly due to ultraviolet rays (UV).

Pyruvic acid has been shown to be effective in reducing pigmentation produced by this agent when used as a peel (Figure 2) (2). It is observed that after 4 peeling sessions, the pigmentation of the skin is considerably reduced.

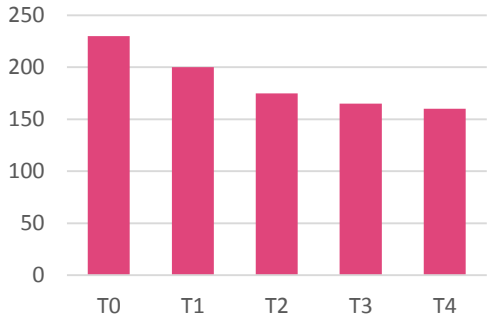

Figure 2. Pigmentation of the skin (melamine content) before the peeling treatment (T0) and after 4 sessions of peeling with pyruvic acid (2).

Advantages over other acids

Pyruvic acid peeling generally does not trigger post-inflammatory hyperpigmentation, flaking, burning, or crusting, as it may occurs with other agents that are commonly used as exfoliants, such as glycolic acid (4).

It also has a very low molecular weight and high lipophilicity that allow it to penetrate into the layers of the skin faster and more deeply.

Recommended dose

Peeling: up to 30% in aquous solution.
Anti-aging: 1 - 10%

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3.- Tran, D., Townley, J. P., Barnes, T. M., & Greive, K. A. (2015). An antiaging skin care system containing alpha hydroxy acids and vitamins improves the biomechanical parameters of facial skin. Clinical, cosmetic and investigational dermatology, 8, 9.

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