Inulin

Many prebiotics are sugars, such as inulin, a polysaccharide sugar that is naturally extracted from the roots and rhizomes of plants such as chicory and artichoke (1).

It works as a prebiotic in the skin's microbiome, which means that it is a nutrient that feeds and promotes the growth of bacteria, naturally present on the skin. In doing so, it forms an antimicrobial protective film on the skin's surface to protect the diversity of the skin microbiota (2,3). There are also studies that suggest that it can even increase the diversity of beneficial bacteria, thus improving the microbiome.

Additional benefits of inulin include hydrating and smoothing the skin, as well as antioxidant properties and the ability to enhance the proliferation of fibroblasts, the cells that produce collagen (2, 3). It is also used as a stabilizer in some cosmetic formulas.

Hydration

Its moisturizing effect has been studied in comparison to high but molecular hyaluronic acid. When a cream containing 1.5% high molecular weight inulin is applied to the skin and the hydration is compared with placebo containing 0.1% high molecular weight hyaluronic acid, it is observed that the inulin cream of high molecular weight hydrates up to 20% more after 28 days of application (3).

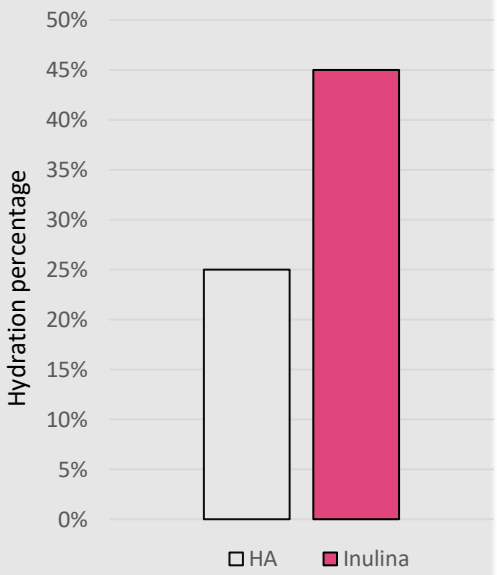

Figure 1. Percentage of skin hydration after treatment with hyaluronic acid or inulin for 28 days.

Preserves the microbiota of the skin

It has been found that some cosmetic preservatives aimed at preventing the growth of unwanted microorganisms can also alter the microbiota of the skin. In these cases, the subsequent application of products with inulin can help to reestablish the natural balance of the microbiota. Figure 1 shows the population of microorganisms on the skin before the application of cosmetics with preservatives and after that application when it is treated with inulin and placebo, showing that when inulin is applied, the microbiota regenerates more quickly (3).

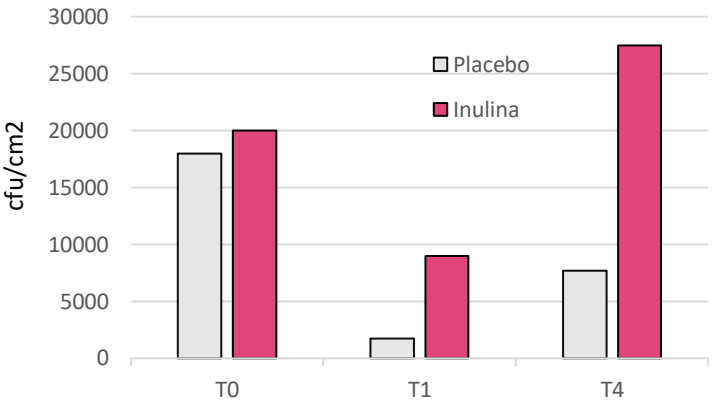

Figure 2. Population of microorganisms on the skin with and without inulin treatment after the application of a cream containing preservatives (T0). T1 = 1h and T4 = 4h

Other benefits

In addition to its topical application, inulin is widely used as an ingredient in functional foods. Clinical research suggests beneficial effects on infant nutrition, gastrointestinal health, bone mineralization, fatty liver disease, obesity, blood sugar, and lipid metabolism, as well as chemopreventive functions and immune system support (4).

Literature

1.- Mutanda, T., Mokoena, M. P., Olaniran, A. O., Wilhelmi, B. S., & Whiteley, C. G. (2014). Microbial enzymatic production and applications of short-chain fructooligosaccharides and inulooligosaccharides: recent advances and current perspectives. Journal of Industrial Microbiology and Biotechnology, 41(6), 893-906.

2.- Nizioł-Łukaszewska, Z., Bujak, T., Wasilewski, T., & Szmuc, E. (2019). Inulin as an effectiveness and safe ingredient in cosmetics. Polish Journal of Chemical Technology, 21(1)

3.- Gonry, P. (2020). Prebiotics: Are they weapons for preservatives?

4.- de Almeida Gualtieri, K., Losi Guembarovski, R., Oda, J. M. M., Fiori-Lopes, L., Ketelut Carneiro, N., de Castro, V. D., ... & Watanabe, M. A. E. (2013). Inulin: therapeutic potential, prebiotic properties and immunological aspects. Food and agricultural immunology, 24(1), 21-31.

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