

Fruit AHA Research Paper

APPEARS IN



The most commonly used hydroxy acids are alpha hydroxy acids (AHAs), which include glycolic acids and lactic acids. The first AHA to be introduced in the skin care products is glycolic acid, the simplest of the AHAs. Lactic acid is also a popular AHA, most prominently used in its L-form for the exfoliation of the skin. Overall, AHAs increase the cell renewal rate and have been found to promote smooth, healthy-looking skin. Three Ships' [Superfruit Exfoliating Mask](#) utilizes this natural formulation to achieve smoother and brighter looking skin.

AHAs INCREASE THE CELL RENEWAL RATE

AHAs help smooth out the top dead layer of the skin (stratum corneum) and allow for better penetration of other ingredients. AHAs dissolve the “glue” between cells to exfoliate the top layer of the skin. Each AHA used in the formula is naturally derived and provides different benefits to the skin. For instance, lactic acid is traditionally used as an exfoliant and disinfectant, while glycolic acid has been shown to have the most keratolytic activity (i.e. making it easier to shed the skin cells) on the skin. However, by combining the mild fruit acids – a blend of lactic, glycolic, citric, malic, and tartaric acids – an effective yet gentle exfoliating formula is achieved.



Vaccinium Myrtillus (Bilberry) Fruit Extract is derived from bilberry (European blueberries). Saccharum officinarum (sugar cane) extract is derived from sugar cane. Acer saccharum (sugar maple) extract is derived from the Sugar Maple tree, which gives us maple syrup and is the tree of the leaf represented on the Canadian flag. Citrus Aurantium Dulcis (Orange) Fruit Extract is derived from the peel of the orange Citrus Aurantium. Citrus Limon (Lemon) Fruit Extract is derived from the fruit of the lemon Citrus Limon. All five botanical ingredients are then processed through an extraction process, which reduces color and odor, while concentrating the active properties of the ingredient. Once extracted and composited, the fruit extract is concentrated by vacuum distillation until a specified concentration of actives is achieved. The product is then filtered to eliminate any particulate matter.

**AHAS FROM SMALLEST TO LARGEST MOLECULAR
SIZE ARE GLYCOLIC ACID, LACTIC ACID, MALIC ACID,
AND CITRIC ACID**

Hydroxy acids are organic acids that have one or more hydroxyl groups attached to a carbon chain. Hydroxy acids can be classified by the position of the hydroxyl group (e.g. α , β , γ) and the number of hydroxyl groups (mono- and poly-). In general, the smaller the molecular size of the AHA, the greater the risk of irritation. This is because a smaller molecular size means that the AHA will be absorbed by the skin at a faster rate and, hence, may cause sensitivity. The AHAs from smallest to largest molecular size are glycolic acid, lactic acid, malic acid, and citric acid. By using a ratio of the AHAs, however, the Fruit AHA blend maximizes efficacy while minimizing the potential for irritation. Hydroxy acids can be derived from plants (e.g. sugar cane, lemons, and oranges) and have been used since Ancient Egyptian time for their anti-bacterial and exfoliating properties. Hydroxy acids are a type of chemical/herbal exfoliant that loosen the glue-like substance that holds cells together, which allows them to slough off and thereby promotes cell turnover.

SCIENTIFIC STUDY

Alpha-hydroxy acids and carboxylic acids

In this study, the effectiveness of different carboxylic acids used in skincare were reviewed. AHAs, PHAs, and ABAs are hydroxy acids, which are naturally derived, modulate skin keratinization, and increase biosynthesis of dermal components. While each carboxylic acid was found to display varying therapeutic actions, AHAs are beneficial for topical treatment of dry and rough skin, and skin changes associated with aging (e.g. photoaging and wrinkles).

Topically applied lactic acid increases spontaneous secretion of vascular endothelial growth factor by human reconstructed epidermis

In this study, the effect of lactic acid on the secretion of cytokines (proteins involved in the immune system's response to inflammation and infection) by keratinocytes was investigated. Creams containing different concentrations of lactic acids were topically applied on human epidermal equivalents. After 24 hours, the epidermal equivalents were analyzed, and the secretion of different cytokines were measured by enzyme-linked immunosorbent assay. Overall, it was found that topical application of AHAs help modulate the secretion of certain cytokines by keratinocytes which contribute to therapeutic effects in disorders (e.g. photoaging).

All in all, the findings suggest that the fruit blend is an effective and natural exfoliating formula, which maximizes cell renewal stimulation while minimizing the potential for irritation. AHAs help to rejuvenate the skin by increasing cell turnover and hence may even help reduce wrinkles and fine lines. The fruit extract used in Three Ships Superfruit Exfoliating Mask is organic, GMO-Free, gluten-free, and vegan.