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IMAGE SKINCARE:

# Glycolic Acid (alpha hydroxyl acid)

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## ABSTRACT

Image Skincare offers products with many active, scientifically proven and researched key ingredients to achieve a certain result on the skin. In order to achieve the maximum benefit, not only one key ingredient, but an array of synergistically working ingredients, to target specific skin concerns, is found in every product. This concept is found throughout each and every line and not the name of the product identifies which ingredient is used, but the ingredient listing. All key ingredients are named on the international nomenclature of cosmetic ingredients (INCI) and are furthermore described on product key ingredient manuals. The uniqueness about Image Skincare is the blend of these ingredients into an advanced formulation with a perfectly balanced pH, which dictated the effectiveness of several ingredients. All products follow the concept of the exclusive CPN System™, a unique blending of Correction, Prevention and Nutrition, only offered by Image Skincare. This three in one concept greatly enhances the effect of each product on the skin and achieves results quicker and more profound.

## General Findings of Glycolic Acid

Glycolic acid is the smallest of the alpha hydroxy acids (AHAs) derived from the sugar cane plant. Because it is so small it can penetrate the top layer of skin to work on the lower

layers of skin or living cells. Glycolic acid has been proven to reduce signs of aging such as wrinkles, loose skin, and hyperpigmentation. Glycolic acid is prepared by the reaction of chloroacetic acid with sodium hydroxide followed by re-acidification

$$ClCH_2CO_2H + NaOH \rightarrow HOCH_2CO_2H + NaCl$$

Figure 1: The reaction to create Glycolic Acid

Because of its high acidity, it is used as an exfoliating agent in skin products and chemical peels to remove the damaged upped layers of skin. As the flaky dead skin is removed with glycolic acid treatment younger, healthier skin underneath appears. Also, because glycolic acid is a hygroscopic it is able to draw moisturizers into the newly-exfoliated skin surface leaving the skin not only less wrinkly, but also bright and hydrated.

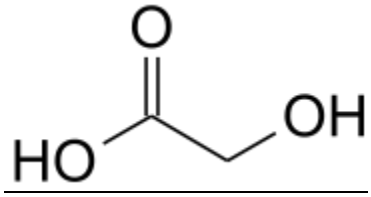


Figure 2: Chemical structure of glycolic acid

## The role in Pigment Disorders

Glycolic Acid has been effective in treating pigmentary lesions such as melasma, solar lentigines, and postinflammatory hyperpigmentation. A clinical study done to understand the effect of AHAs on melanogenesis, (the formation of melanin or dark spots by living cells) was done using melanin assays, growth curve determinations, Northern and Western blotting for melanogenic proteins [tyrosinase, tyrosinase related protein (TRP)-1 and TRP-2],

and tyrosinase and, 4-dihydroxyphenylalaninechrome tautomerase enzyme activity assays using mouse B16 and human melanoma cell. The result was Glycolic Acid at at doses of 300 or 500 microg/ml inhibited melanin formation without affecting cell growth. Tyrosinase activity was also inhibited, the enzyme that speeds up the production of melanin. The conclusion from the study was Glycolic Acid reduces pigmentary lesions not only by accelerating the turnover of the epidermis but also by directly inhibiting melanin formation in melanocytes.

## The role in photo- aged skin

A clinical study on glycolic acid was performed to show the effects of it on photo-aged skin by clinical and microanalytic means. Photo-aged skin is skin that has had prolonged exposure to UV radiation leaving evidence of aging on the skin such as dark spots and wrinkles. The study used a lotion containing 25% glycolic, lactic, or citric acid to one forearm and a placebo lotion to the opposite forearm for 6 months. Thickness of the arm was measured throughout the study and biopsy specimens from both forearms were taken at the end of the study. This clinical study found treatment with AHAs caused an approximate 25% increase in skin thickness along with increased acid mucopolysaccharides, improved quality of elastic fibers, and increased density of collagen with no evident inflammation. The study proved glycolic acid not only heals damaged photo-aged skin but reversers the signs of damaged, photo-aged skin. After treatment with glycolic acid, skin is left firmer, smoother, and tighter.

## The role as an anti-oxidant and anti-inflammatory

A study proved glycolic acid to act as an anti-oxidant and anti-inflammatory. The objective was to test the effects of short-wave ultraviolet light (UVB) on skin treated with glycolic acid. Two different studies were done to test this. One study tested the effect of topical glycolic acid on the

backs of human volunteers using erythematous templates. Erythema, or redness of skin, was induced by exposure to three times the minimum erythema dose (MED) of UVB. A Glycolic acid cream was added to the template beginning 4 hours prior irradiation four times a day. A second template on the same subject was used as a vehicle control. After 48 hours there was a reduction in the erythema of the glycolic acid cream where in the vehicle treatment there was none. The second study done was to understand the effect of glycolic acid treatments applied at different times and for different amounts of time on the skin. To do this, four test sites were exposed to UVB light in different manners. The first site was a non treated control site. The second site had the same amount of UVB as the first site but was treated with a glycolic acid based products 24 hours before irradiation for 7 days. Site 3 was treated with these glycolic acid products 3 weeks prior to being exposed to the UVB light. What this study found was a 16% reduction in irritation was observed in the skin treated in site 2 with the glycolic acid treatment for 7 days prior to UVB exposure compared to site 1 where there was no treatment. When the skin was treated for three weeks prior to UVB exposure as in site 3, the results revealed the skin achieved a sun protection factor (SPF) of 2.4. The results revealed topical glycolic acid provides a photoprotective effect to pretreated skin and when it is applied to irradiated skin, it speeds up the resolution of erythema. Therefore glycolic acid acts as an antioxidant and anti-inflammatory.

Image Skincare offers effective products with glycolic acid mainly in the Ageless™ line. An effective treatment regime can be established using the *Ageless total facial cleanser* and the *Ageless total anti-aging serum with Stem Cell Technology* in the morning, and the *Ageless total facial cleanser* as well as the *Ageless total repair crème* (beginning with 2 to 3 times a week) in the night. All of these products contain effective amounts of a blend of alpha hydroxy acid, anti-oxidants and botanicals.

References

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