

Academic Information

Twenty-second Amino Salon Lecture for the Media on "Beautiful skin and amino acids"

The "Amino Salon" Lecture for the Media was held in Otemachi, Tokyo, on Feb. 16, 2005. In the lecture, entitled "Beautiful skin and amino acids", Dr. Iwasaki, the chief researcher at Ajinomoto Amino Science Laboratories, made a presentation on the structure and function of the skin, the relationship between the skin and amino acids, and the use of amino acids in skin care.



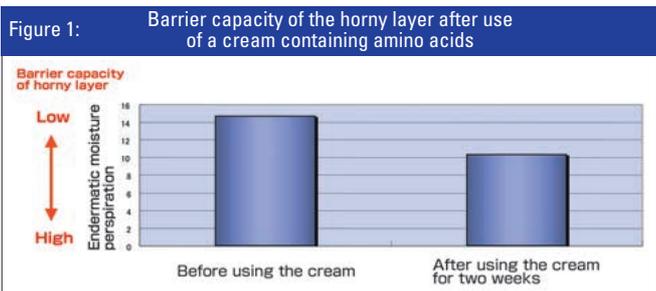
Dr. Iwasaki

It is essential to ensure moisture retention of the horny layer, the outermost layer of the skin, for preservation of young-looking, beautiful skin. More than half of the moisturizing components in the skin are amino acids and an amino acid-derived component (PCA). In addition, the horny layer retains its function while repeating its metabolism. The moisturizing action and the metabolism of the skin deteriorates gradually with age, according to physical constitution, or under an external stress -for example, dry conditions or ultraviolet light. However, it was recently confirmed that it is possible to alleviate damage to and improve the function of the horny layer by applying a

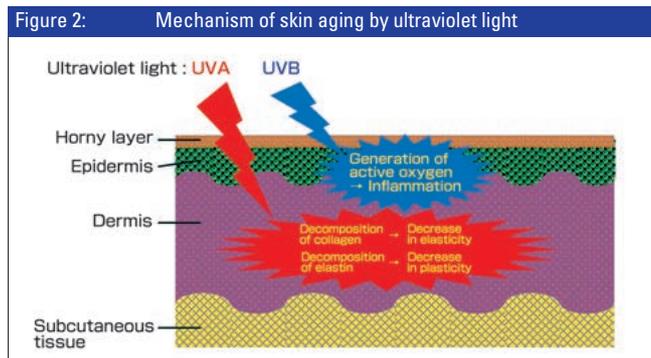
cream rich in amino acids to the skin and supplementing amino acids in the body (Figure 1).

In addition, the dermis located beneath the epidermal horny layer, which contains proteins such as collagen and elastin, plays a role in preserving the elasticity and plasticity of the skin. However, the actions of these proteins also deteriorate with age and exposure to ultraviolet light (Figure 2). Although the dermis is located deeper in the skin, and is difficult for cosmetic ingredients to penetrate to, there are reports that use of glutamine improves the production of collagen in dermal fibroblasts and oral intake of arginine accelerates recovery of damaged skin.

Amino acids are effective through both endermatic adsorption (e.g., from a face lotion, emulsion, cream, etc.) and oral intake (from a supplement, drink, etc.), providing biological building blocks for the skin as well as maintaining the proper balance among them. As opposed to the temporary relief obtained by applying a lipid or a wetting agent, amino acids accelerate permanent and fundamental improvement of the skin.



The barrier capacity of the horny layer was evaluated by determining endermatic moisture perspiration after use of a cream containing amino acids (Ajinomoto JINO Aminoceutical Cream) for 2 weeks. [from data for presentation of Ajinomoto JINO Aminoceutical Cream products (2004)]



Structure of skin

Componets of NMF

Amino acids	PCA	Lactic acids	Urea	Others
42%	12%	11%	7%	28%

H.W.Spier, G.Pascher Der Hautart, Vol.7,55-60(1956)

It has been reported that natural moisturizing factor (NMF) contained in the horny layer consists of approximately 40% of various amino acids and 12% moisture rich pyrrolidone carboxylic acid (PCA)*

* Pyrrolidone carboxylic acid is formed by cyclization of glutamic acid

Composition diagram of amino acids in skin and hair

Amino acid composition of NMF
H.W. Spier, G. Pascher Der Hautarzt, Vol.7, 55-60(1956)

Amino acid composition of human skin collagen
J.E.EASTOE Treatise on collagen Ch.1 p52-53

Amino acid composition of hair