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DHA - the "Sugar" Tan

It is booming business: self-tanning products. Dihydroxyacetone (DHA) is the main ingredient used to create the sunless tan which is found in a variety of sunless products such as sunless solutions for spray tanning and a multitude of self-tanning skincare products like gels, sprays, creams, and lotions. Now, let's take a closer look at dihydroxyacetone.

Tanned skin, without the use of ultraviolet light? Seems like magic. However, the sunless tan is the result of the safe and simple effect of DHA reacting with the upper layer of the skin. A threat to the UV tanning industry? Well, it could be. Or it could complement it. Some people are looking for an instant or darker tan. Others are looking for UV alternatives but still want a tan. Either way, DHA (a fine white powder) can be added to a number of sunless products to create the sunless tan or it can also be used in tanning cosmetics to provide a boost in color during or after UV tanning sessions.

Studies

German scientists first recognized DHA as a skin coloring agent in the 1920's. Dihydroxyacetone was used in the X-ray process and the scientists noted that it turned the skin's surface brown when spilled. In the 1950's Eva Wittgenstein at the University of Cincinnati located in Ohio (USA) used DHA as an oral drug for assisting children with glycogen storage disease. Children received large doses of DHA by mouth and sometimes spat a bit of substance onto their skin - which turned the skin brown. There are also stories about children with brown spots on their mouth area after eating sugar beets. Experiments and studies proved that DHA could reproduce the pigmentation effects of the skin - coloring it darker. It has other medical applications as well, including helping blend the skin tone in patients suffering from Vitiligo, a chronic skin condition that causes the loss of pigmentation in areas of the skin.

Melanoidins

DHA won't give any extra tanning results when exposed to UV-rays, since it is a different process in a different layer of the skin. In the tanning process, when the skin is exposed to ultraviolet rays, the melanin in the skin produces its own tan. "This process of melanin production happens with UV exposure, but DHA has no impact on melanin production. DHA reacts chemically with the protein containing keratin in the upper layer of the skin producing pigments called melanoidins," explains Alexander Schechter, president and founder of Aviva Labs, headquartered in the USA. His company creates sunless tanning solutions and retail products.

Quality

The quality of formulations containing DHA has improved dramatically, particularly in terms of stability and enhanced delivery. DHA is available in different grades, the purer the grade, the better sunless tanning results should be expected. There are three major commercial producers of DHA worldwide and many additional companies that resell DHA. It is important that manufacturers purchase DHA from a reputable source, because it's critical to know not only the quality but also the conditions the DHA was exposed to given that that poor handling, improper storage conditions, etc. can dramatically affect the quality of the DHA. "A quality DHA product can only be created with quality ingredients. When it comes to sunless tanning, try what works the best for your skin and provides the most natural-looking results," advises Schechter.

Formula

Will more DHA give the skin a darker tan? "No! That is a common misconception," states Schechter. It is not the amount of DHA which creates a deeper tan, it is all in the formula. The balance of DHA must be perfect with the other ingredients. Simply adding more DHA will not give the results you want," warns Schechter. But, there is another factor that is very important to the sunless tan results on the skin: the skin type. For example, a redhead simply does not look natural with a tan that is too dark, whereas a person with dark hair and eyes can go with a tan that provides extra color. Schechter goes on to explain: "Through our experience, we've learned that different skin looks different with the DHA. This has nothing to do with melanin, as I already explained, but with the person's skin type and tone. That is why - we've created different sunless tanning solutions designed specifically for different skin types".

Future

Aviva Labs is one of the first sunless skincare companies to introduce a variety of natural, hypoallergenic, oil-free, sunless formulas designed for different skin types and is working on a new line of retail sunless products that are natural/organic and paraben-free. "The sunless tanning market is growing and will continue to gain in popularity, because of its safe nature and instant results," predicts Schechter. "In conjunction with this trend, more and more consumers want to have products with natural/organic ingredients. Together, it's a great combination. DHA is typically produced from plant sources (such as sugar beets and sugar cane) and when used in conjunction with other natural, high-quality ingredients, the resulting sunless tanning formula has immense market appeal," believes Schechter. The range of skincare products with DHA will continue to be expanded. Daily moisturisers and body lotions already have DHA and make-up (for example: foundation) could follow. The manufacturer also sees a future for DHA in the medical world. "There is also great opportunity for using DHA-based products to help people with Vitiligo and other forms of skin de-pigmentation conditions mask the de-pigmented areas. Another use for sunless tanning products is for patients with skin cancer and those undergoing chemotherapy who are advised to minimize their UV exposure," explains Schechter.

Multiple uses

The Food and Drug Administration (FDA) permanently added DHA on its list of approved cosmetic ingredients in 1970's. Today, DHA is the only tanning agent approved by the FDA and is a popular ingredient in majority of sunless tanning skincare preparations. "DHA is a safe ingredient with a long track-record. There are few reports of allergic reactions. The big question in those cases: what caused the allergic reaction? Was it the DHA? Or, was it one of the other ingredients in the product?" asks Schechter.

DHA is not only used in cosmetics for the colouring effect it has on the skin but in nutrition as well. When combined with pyruvate, DHA is sold as an athletic nutritional supplement which claims to be an orally administered fat-burner that also increases lean muscle mass. With multiple uses and the ever-increasing popularity of products containing DHA, we can expect DHA to play an even bigger role in our lives!

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