



## Stimulation of Beta-Endorphin and DHEA Activity to Redensify the Skin

Densorphin, a new cosmetic ingredient developed by Mibelle Biochemistry, is a chaste tree extract which was encapsulated on maltodextrin. Densorphin was shown to stimulate the synthesis of sex hormones and to exert a beta-endorphin effect leading to an improvement of skin elasticity and density.

The peptide hormone beta-endorphin and the steroid hormone dehydroepiandrosterone (DHEA) play important roles in the skin. Beta-endorphin is a messenger used to regulate reactions to stress and pain as well as feelings of euphoria. In the skin, the beta-endorphin is involved in nociception and reactions to inflammation. There are scientific publications demonstrating a role of beta-endorphin and its receptor in wound healing and skin regeneration. DHEA is the precursor for both sex hormones, the female estrogen as well as the male one, testosterone. In the peripheral tissues, DHEA is transformed to the final sex hormones, depending on the tissue's needs. Estrogen plays a very important role in skin health and skin aging. It stimulates the production of collagen and elastin and inhibits the breakdown of the existing fibers.

The level of circulating DHEA decreases in men

between the ages of 40 to 80 years and in women between the age of 30 and the menopause by about 60%. Plasma levels of beta-endorphin were also found to be significantly decreased in postmenopausal women compared to fertile women.

For a couple of years it has been known that the skin not only represents a target for circulating sex hormones but has itself, the capacity to produce from the lipid precursor cholesterol the steroid hormone DHEA and all the final sex steroids.

Chaste tree (*Vitex agnus-castus*), also known as monk's pepper, is a large shrub native to the Mediterranean area that produces aromatic berries with a bitter taste. Dried chaste tree berries have been used until now as a pepper substitute and as herbal medicine to treat disorders of the female reproductive system. Nowadays it is especially recommended for the treatment of premenstrual

syndrome (PMS). An ethanol extract of chaste tree was shown to contain components that specifically bind to the beta-endorphin receptor and thus to exert a beta-endorphin effect. In a cell culture model used to study effects on the biosynthesis of steroid hormones, the extract of the chaste tree was found to stimulate the synthesis of DHEA. All of this data demonstrates a potential for the chaste tree extract as a cosmetic ingredient to treat the skin in aging women and men. In clinical studies 15 women and 15 men all aged between 50 and 76, used a cream with 2% Densorphin which was found to clearly improve skin elasticity and density in the dermis, analysed by ultrasonography. Quantification of the skin density, and compared to the placebo-treated area, showed a statistically significant increase of 9.2%.

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