

Effects of Dietary Cerebroside on the Skin Barrier Function

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Abstract

Sphingolipids play an essential role in maintaining normal skin function. Skin structure - Human epidermis consists of the stratum basale, stratum spinosum, granulosum, and stratum corneum from the inner layer toward outside, and the lipid component differs among the layers. In the stratum basale, phospholipids and cholesterol are the major component. Cerebroside gradually increases from the stratum basale toward the granulosum, and cerebroside is the major component in the granulosum. In contrast, in the stratum corneum, ceramide is produced using cerebroside as a precursor, and accumulates.

In order to apply cerebroside for cosmetics, the influence on barrier effect, melanin synthesis and proliferation effect were studied.

1. Hairless mouse were fed with 50 μ g cerebroside per day. After 3 weeks ingestion, acute barrier perturbation was induced by tape-stripping(10 strips). The recovery from the acute barrier perturbation was accelerated (about 20~30% increase) in the mouse fed with dietary cerebroside.

2. The effect of cerebroside on melanin synthesis was examined using cultured B16F10 melanoma cell *in vitro*. Thus it is expected that the whitening effect may be yielded by daily intake of DS-CB.

3. Proliferation effect of cerebroside on normal human fibroblast(NHF). CB from corn proliferates normal human fibroblast more than ethanol by 30%. NHFs were placed in 96 well plate at a density of 1×10^3 cells, and cultured with DMEM supplemented with 10% FBS for 48h. This result was measured by MTT assay.

Consequently, when corn cerebroside were applied to cosmetics, we verified that water holding function of horny layer became so high. So, we expect that corn cerebroside play an important role in effective cosmetic material.