

&lt;原 著&gt;

## 乳酸菌培養液のスキンケアへの応用 (1) 保湿性<sup>注1)</sup>

山田 弘生\*, 曾根 俊郎\*, 木村 雅行\*,  
轟木 和子\*, 遠藤 寛\*

### Application of a Lactic Acid Bacteria Culture Filtrate to the Skin Care (I) Moisturizing Effect on the Horny Layer

Hiromi YAMADA\*, Toshirō SONE\*, Masayuki KIMURA\*,  
Kazuko TODOROKI\* and Hiroshi ENDŌ\*

#### Abstract

It has been known that the lactic acid bacteria culture in milk media has a moisturizing effect on the skin. Quantitative studies of this effect were carried out by the high frequency electric current method for the evaluation of water content of the horny layer. A constant pressure electrode holder was newly devised for this experiment.

*Streptococcus thermophilus* was cultured in skim milk at 37°C for 72 h and the culture filtrate was used as the test material. When the filtrate was applied to the skin at the rate of 1.8 mg dry weight per cm<sup>2</sup> skin surface, an increase of 11.3 micro mho (mean of 10 persons) in conductance was observed in the treated skin area. This result indicates an increase in water content of the horny layer.

In order to determine the active component responsible for this effect, the culture filtrate was fractionated by 80% ethyl alcohol precipitation. The alcohol soluble fraction increased the skin conductance, whereas the insoluble fraction caused a decrease. Further purification of the alcohol soluble fraction showed that the active materials were lactic acid, glucose and phosphoric acid. The insoluble fraction was identified to be proteose-peptone, which is a low molecular weight protein of milk, and it was revealed that application of only 5 micro g per cm<sup>2</sup> skin caused an apparent decrease in conductance. It appears that a thin film of low water content was formed on the skin surface. The trans-epidermal water loss did not change in this case.

The cooperative action of lactic acid as a moisturizer and proteose-peptone as a film forming substance was discussed.