

(原 著)

## MTL (マロチラート) の育毛効果

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### The Stimulatory Effect of MTL (Malotilate) on Hair Growth

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#### Abstract

We have investigated the hair-growth effect and action mechanisms of malotilate (MTL), which is known to have a stimulatory effect on liver regeneration. After the topical application of MTL solution (0.5–2.0%; composed of ethanol and propylene glycol at a 8 : 2 ratio) to the backs of C3H mice, we found that an earlier conversion from the telogen to anagen phase was induced. Furthermore, the anagen hair growing increased parallel to the concentration of applied MTL. We applied MTL lotion to 81 human male volunteers and evaluated its hair-growth stimulating effect for 32 weeks using double blind test. We found that the active MTL solution exhibited slight to marked effect in 41 % of the subjects as compared to 20 % in the placebo group. We have also investigated the use of MTL (0.01 and 0.1  $\mu$ M) in mouse vibrissae hair follicle organ culture and found the growth rate of hair shaft and ATP contents of hair follicles are significantly increased. In addition, we have tested the effect of MTL on the growth of human newborn epidermal keratinocytes. Furthermore, when we co-cultured these keratinocytes with human hair papilla, MTL's keratinocyte proliferation-stimulating effect was enhanced. The above evidence seems to indicate the hair-growth stimulating effect of MTL is due to enhanced energy-producing ability of hair follicles as well as stimulation of hair papilla cells, which is known to have keratinocyte proliferation-stimulating effect. Our preliminary studies seem to indicate that MTL has a preventive effect on the induction of white hair caused by water immersion stress in C57BL mice experimental systems.

**Key words:** MTL (malotilate), hair growth, white hair, keratinocyte, ATP production.