

〈教育セミナー〉

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シワ改善剤の機構解析と有用性

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Elastase Inhibitors: The Usefulness and Mechanism of Action

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Abstract

As is well known, exposure to UV, free-radical and dry environment are the causes of wrinkle formation. The mechanism of wrinkle formation has not been fully clarified yet, but the following hypothesis was proposed: UV increases fibroblast elastase that cuts elastin fibers, which in turn decreases the dermal elasticity. The loss of dermal elasticity results in the formation of deep facial wrinkles in people aged 40 and over. We previously reported that topical application of *N*-phenethyl-leucyl-tryptophane (NPLT), an agent that specifically inhibits fibroblast elastase, increases skin elasticity and in turn prevents wrinkle formation. More recently, we screened natural materials to explore an elastase inhibitor that can be used on human skin and found an inhibitory effect similar to NPLT in ginger and burnet extracts. Subsequently, we succeeded in isolating six inhibitory compounds against elastase in ginger extract. Based on this information, we modified the extraction process to develop more effective elastase inhibitors. Consequently, we have produced a novel ginger extract that shows seven times more inhibitory activity than that of previous ginger extract. The curative effect of this new extract against human wrinkles was confirmed *in vivo*. These findings indicate that inhibition of elastin fiber degeneration maintains and promotes dermal elasticity, which in turn prevents and reduces human wrinkles.

Key words: wrinkle formation, fibroblast elastase, skin elasticity, elastase inhibitor, ginger.