Synopsis of Original Research Paper

# Expression and functional analyses of moisturizing gene FABP5 in the skin

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The fatty acid-binding proteins (FABPs) are a family of low-molecular weight, intracellular lipid-binding proteins consisting of ten isoforms. FABPs are involved in uptake and transport of fatty acids. Recent studies have shown that FABPs play important roles in the regulation of gene expression, cell growth and differentiation.

In the present study, we have shown that epidermal fatty acid-binding protein (FABP5), of these isoforms, is specifically expressed in undifferentiated and differentiated human epidermal keratinocytes. Its expression level in differentiated keratinocytes is higher than that in undifferentiated cells. To clarify mechanisms of FABP5 gene expression and its function during epidermal keratinocytes differentiation. As a result, the methylation status of CpG island in FABP5 gene promoter was almost the same between before and after keratinocytes differentiation. Furthermore, c-Myc and Sp1, potent transcription factors involved in FABP5 gene expression were unchanged during keratinocytes differentiation. Therefore, other unknown factors could be responsible for the regulation of FABP5 gene expression during keratinocytes differentiation.

To clarify function of FABP5 during the course of differentiation of epidermal keratinocytes and in the differentiated epidermal keratinocytes, we have next tried to do the knockdown of FABP5 gene with siRNA. As a result, we have shown that FABP5 knockdown reduced expression levels of the differentiation marker such as Keratin 10, suggesting that FABP5 might play an important role in regulating human keratinocytes differentiation. In addition, we showed that nuclear receptor ERRα which have been shown to crosstalk with FABP5 are involved in regulation of keratinocytes differentiation. Further studies should be needed to clarify its mechanisms in the future.

Thus, the present study suggests that FABP5 could be a promising molecular target to study homeostasis, aging and inflammation in human epidermal keratinocytes.