Synopsis of Original Research Paper

The regulation of AQP3 in skin and keratinocytes

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Water is important for skin to keep its moisture. Water transport is conducted by channel proteins named aquaporins. Several aquaporins play pivotal roles in water metabolism in our body. AQP3 is expressed in the skin and its importance for the skin moisture is demonstrated by the study of AQP3 knockout mice which have accelerated drying of the skin. The prevention of dry skin is important not only from the cosmetic point of view but also from the clinical point of view, i.e. it is responsible for an itch especially in aged people. This study was intended to search for the substances which upregulate the expression of AQP3 in the skin. We used rat skins and human kerationcytes as models. In rat skins, vitamin A increased the AQP3 expression in a high dose (10%) but not in lower doses. However, the AQP3 expression was unaffected by vitamin A in a cell line from human keratocarcinoma. On the other hand, the expression of AQP3 in this cell line responded to hypertonic stimulation with sorbitol suggesting that this cell line is useful for the screening of the candidate substances which increase AQP3 expression.