

## The Hair Growth Effects of *Undariopsis peterseniana*

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**Abstract :** This study was conducted to evaluate the effect of *Undariopsis peterseniana*, a seaweed native to Jeju Island, Korea, on the growth of hair. The dermal papilla cells (DPCs) have known to regulate hair growth cycle and length of hair follicle through interact with epithelial cells. When immortalized vibrissa DPCs were treated with the *U. peterseniana* extract, the *U. peterseniana* extract significantly increased the proliferation of DPCs. The effect of *U. peterseniana* extract on the growth of vibrissa follicles was also examined. *U. peterseniana* extract significantly increased the hair-fiber lengths of the vibrissa follicles. Hair loss is partly caused by dihydrotestosterone (DHT) binding to androgen receptor in hair follicles, and the inhibition of 5 $\alpha$ -reductase activity can prevent hair loss through the decrease of DHT level. The *U. peterseniana* extract inhibited 5 $\alpha$ -reductase activity. Minoxidil, a potent hair-growth agent, can induce proliferation in NIH3T3 fibroblasts by opening KATP channels. We thus examined the proliferative effects of *U. peterseniana* extract in NIH3T3 fibroblasts. *U. peterseniana* extract significantly increased the proliferation of NIH3T3 fibroblasts. Tetraethylammonium chloride (TEA), a K<sup>+</sup> channel blocker, inhibited *U. peterseniana*-induced proliferation in NIH3T3 fibroblasts. These results suggest that *U. peterseniana* could have the potential to treat alopecia through the proliferation of DPCs, the inhibition of 5 $\alpha$ -reductase activity and the opening of KATP channels. [Acknowledgement] This research was supported by The Leading Human Resource Training Program of Regional Neo industry through the National Research Foundation of Korea(NRF) funded by the Ministry of Science, ICT and future Planning (2016H1D5A1908786).

**Keywords :** hair growth, *Undariopsis peterseniana*, vibrissa follicles, dermal papilla cells, 5 $\alpha$ -reductase, KATP channels

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