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Effects of topically applied MSP extract on hair growth of female C57BL/6 mouse under mild chronic stress

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Although typically regarded as a male problem, hair loss can also occur in women. The studies were reported that wide range of environmental factors is responsible for hair loss as well as hormonal causes. Stress has long been recognized as a cause of hair loss, but yet is controversial due to the lack of solid evidence. While women reporting higher levels of stress had more hair loss and thinning. The study examined the effects of MSP extract on hair growth in chronic stress-induced C57BL/6 mice and the mechanism of action on how to stimulate hair growth. Six-week-old female C57BL/6 mice were divided into three experimental groups (n=8/group); the dimethyl sulfoxide (DMSO) group (NC), the DMSO + stress group (NCS), the minoxidil group (PC), the minoxidil + stress group (PCS), MSP extract group (MSP) and MSP extract + stress group (MSPS). Dorsal skins of animals were shaved and 200 μ of test samples were topically applied for 3 weeks every day. It was observed morphological characteristics of hair follicles, mast cell no. , stem cell factors(SCF), substance P along with hair growth related cytokines in the skin tissues. Depth of hair follicle in MSP and MSPS groups were higher than those of NC, NCS, PC and PCS groups. Mast cell number of MSP group was the lowest and that of NCS the highest ($p<0.05$). Also, SCF in MSP and MSPS groups was stained stronger than any other groups. TGF-β1 expression of MSP group was the lowest, and vascular epithelial growth factor expression was similar to that of NC group. From the findings, topical application of MSP extract seems to exert an positive effect on hair growth of female mouse by strengthen hair follicle, promoting hair growth factors, and decreasing mast cells as well as TGF-β1 expression.

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