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Topical Application of Ketoconazole Stimulates Hair Growth in C3H/HeN Mice

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Abstract

Ketoconazole (KCZ) is an imidazole anti-fungal agent that is also effective in topical applications for treating seborrheic dermatitis and dandruff. Recently, topical use of 2% KCZ shampoo has been reported to have had a clinically therapeutic effect on androgenetic alopecia. The present study was conducted with the purpose of quantitatively examining the stimulatory effect of KCZ on hair growth in a mouse model. Coat hairs on the dorsal skin of seven week-old male C3H/HeN mice were gently clipped, and either 2% KCZ solution in 95% ethanol or a vehicle solution was topically applied once daily for three weeks. The clipped area was photographed, and the ratio of re-grown coat area was then calculated. The results demonstrated that 2% KCZ had a macroscopically significant stimulatory effect compared with the vehicle group ($p < 0.01$, $n = 10$). Repeated experiments showed similar effects, confirming the efficacy of KCZ as a hair growth stimulant. Although the therapeutic mechanism of topical KCZ for hair growth is unclear, our results suggest that topical applications of the substance are useful for treating seborrheic dermatitis accompanied by hair regression or male pattern hair loss.

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