
Subject: Selen gegen Fluoride

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Fluorine-Induced Apoptosis and Lipid Peroxidation in Human Hair Follicles In Vitro.

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Fluoride is an essential trace element for human body; however, exposure to high amounts of fluoride has been documented to be correlated with an increasing risk of hair loss. To date, little is known about the mechanism(s) of how fluoride affects hair follicles. Here, we demonstrated that middle (1.0 mmol/L) and high (10.0 mmol/L) concentrations of sodium fluoride (NaF) significantly inhibited hair follicle elongation in vitro, but low NaF (0.1 mmol/L) showed little influence. Moreover, treatment with high levels of NaF resulted in a marked increase in terminal dUTP nick end labeling-positive cells in the outer layer of the outer root sheath, the dermal sheath, and the lower bulb matrix surrounding dermal papilla. Furthermore, the enhanced apoptosis was coupled with an increased oxidative stress manifested as higher malondialdehyde content. Additionally, the presence of selenium considerably antagonized the effects of middle NaF on hair follicles, with regard to either the suppression of hair growth or the induction of oxidative stress and apoptosis. In conclusion, exposure to high levels of fluoride compromises hair follicle growth and accelerate cell apoptosis in vitro. The toxicity of fluoride can be reduced by selenium, at least partially via the suppression of intracellular oxidative stress.

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