



HAIR DISORDERS

## THE EFFECT OF DAILY ASPIRIN USE ON TOPICAL MINOXIDIL TREATMENT FOR PATTERN HAIR LOSS

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**Introduction:** Topical minoxidil is the only US FDA topical drug for the treatment of pattern hair loss. Minoxidil is a pro-drug converted into its active form, minoxidil sulfate, by the sulfotransferase enzymes in the outer root sheath of hair follicles. In human liver, the phase II metabolism of xenobiotics by sulfotransferase is significantly inhibited by salicylic acid.

**Objective:** Due to the widespread practice of daily aspirin use as a prophylactic treatment for heart conditions, it is important to determine if prolonged aspirin use effects sulfotransferase activity in hair follicles.

**Methods:** Twenty-four male subjects with AGA were recruited to study. Plucked hair samples were collected at the initial visit and analyzed using the sulfotransferase activity assay previously reported by Goren et. al. Subjects were provided 14 tablets of 75mg aspirin, used once per day. Plucked hair samples were collected after 14 days of treatment and analyzed using the sulfotransferase activity assay.

**Results:** Of the 22 subjects that completed the study, 12 (55%) subjects had a significant reduction ( $p < 0.0001$ ) in follicular sulfotransferase enzymatic activity, i.e.,  $> 0.2$  OD reduction following 14 days of aspirin therapy. More importantly, the sulfotransferase activity assay initially predicted that 11 (50%) of the 22 subjects may respond to topical minoxidil. However, following 14 days of aspirin administration only 6 (27%) subjects were predicted to respond to topical minoxidil.

**Conclusion:** Minoxidil efficacy in the treatment of AGA is limited by the sulfotransferase enzymes activity in ORS of hair follicles. The same enzyme is significantly inhibited by aspirin. In this study, we demonstrated that low dose oral aspirin inhibits the activity of sulfotransferase enzymes in the human hair follicle. Therefore, chronic use of low dose aspirin is likely to reduce the efficacy of topical minoxidil treatment.

