HAIR DISORDERS

UP-REGULATION OF FOLLICULAR SULFOTRANSFERASE ACTIVITY VIA A NOVEL PATHWAY MAY INCREASES MINOXIDIL RESPONSE AMONG ANDROGENETIC ALOPECIA PATIENTS

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Introduction: Topical minoxidil is the only topical drug approved by the US FDA for the treatment of androgenetic alopecia (AGA). Clinical studies have demonstrated that the majority (>60%) of AGA patients fail to respond to topical minoxidil therapy. Minoxidil is a pro-drug converted to its active metabolite, minoxidil sulfate, via sulfotransferase enzymes located in the outer root sheath (ORS) of hair follicles. Previously, we have demonstrated that follicular sulfotransferase activity predicts minoxidil response in AGA patients.

Objective: The sulfotransferase family of enzymes (SULTs) lack a TATA response element and thus are not easily inducible. However, other pathways have been suggested that can influence the expression of sulfotransferase. Here, we report a novel topical formulation that up-regulates sulfotransferase expression and would be expected to increases minoxidil clinical efficacy.

Methods: 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 with the novel topical formula (a shampoo) and instructed to use it daily. After 7 days of using the topical formula, plucked hair samples were collected and analyzed using the sulfotransferase activity assay.

Results: Of the subjects that completed the study, approximately 60% demonstrated up-regulation of sulfotransferase enzymatic activity.

Conclusion: Minoxidil efficacy in the treatment of AGA is limited by the sulfotransferase enzymes activity in the ORS of hair follicles. The novel formula described here up-regulates sulfotransferase in the ORS. As such, we predict that a combination therapy of the new topical formula and minoxidil will lead to better clinical results for AGA. We are currently studying the clinical results of the new combination therapy versus traditional topical minoxidil.