Subject: Studie: Androgene hemmen positive WNT - Wirkung in vitro
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1: J Clin Endocrinol Metab. 2009 Jan 13. [Epub ahead of print]Click here to read Links
Keratinocyte growth inhibition through the modification of Wnt signaling by androgen in balding dermal papilla cells.
Kitagawa T, Matsuda KI, Inui S, Takenaka H, Katoh N, Itami S, Kishimoto S, Kawata M.

Department of Dermatology Kyoto Prefectural University of Medicine Graduate School of Medical Science, Kyoto, Japan; Department of Anatomy and Neurobiology Kyoto Prefectural University of Medicine Graduate School of Medical Science, Kyoto, Japan; Department of Regenerative Dermatology, Graduate School of Medicine Osaka University, Osaka, Japan.

Context/Objective: Androgen induces androgenetic alopecia (AGA) which has a regressive effect on hair growth from the frontal region of the scalp. Conversely, Wnt proteins are known to positively affect mammalian hair growth. We hypothesized that androgen reduces hair growth via an interaction with the Wnt signaling system. The objective of this study was to investigate the effect of androgen on Wnt signaling in dermal papilla (DP) cells. Design: The effect of androgen and Wnt3a on keratinocyte (KC) proliferation was measured by use of a co-culture system consisting of DP cells and KCs. The molecular mechanisms of androgen and Wnt pathway interactions in DP cells were examined by analyzing the expression, intracellular localization and activity of the androgen receptor (AR) and also down-stream Wnt signaling molecules. Results: Wnt3a-dependent keratinocyte growth was suppressed by the addition of dihydrotestosterone (DHT) in coculture with DP cells that were derived from AGA patients, but growth was not suppressed in coculture with DP cells from non-AGA males. While DP cells from both scalp regions expressed AR protein, the expression levels of AR and co-translocation with beta-catenin, a down stream Wnt signaling molecule, were higher in DP cells of AGA patients than in DP cells from non-AGA males. In addition, significant suppression of Wnt signal-mediated transcription in response to DHT treatment was observed only in DP cells from AGA patients. Conclusion: These results suggest that Wnt signaling in DP cells is regulated by androgen and this regulation plays a pivotal role in androgen's action on hair growth.