
Subject: Adenosine stimulates growth of dermal papilla and lengthens the anagen phase

Posted by [kkoo](#) on Tue, 25 Oct 2011 10:37:14 GMT

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Hehe, das hatten wir vor zig Jahren auch schon diskutiert...

Adenosine stimulates growth of dermal papilla and lengthens the anagen phase by increasing the cysteine level via fibroblast growth factors 2 and 7 in an organ culture of mouse vibrissae hair follicles.

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Source

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Abstract

Hair regression and balding are distressing concerns for an increasing number of people due to changes in lifestyle and serious nutritional imbalances. Therapies for treatment of hair loss are needed. Among potential therapeutics, adenosine has been suggested as a potent regulator of hair growth. In this study, we investigated the effects of adenosine on hair follicles and dermal papilla (DP) cells, and the mechanism underlying the action of adenosine. Hair follicles are organs, including DP cells, that are responsible for the production of hair fibers by inducing and maintaining the hair growth phase (anagen). In a culture of DP cells in vitro, adenosine stimulated proliferation of DP cells by increasing thymidine uptake. Subsequently, adenosine activated and elongated the anagen phase by increasing the uptake of radiolabeled cysteine in an organ culture of mouse vibrissae hair follicles. We also confirmed that adenosine promoted the expression of several growth factors that are responsible for hair growth, including fibroblast growth factors (FGF)-7, FGF-2, insulin-like growth factor (IGF)-1, and vascular endothelial growth factor (VEGF) in a cDNA microarray with semi-quantitative RT-PCR. Transcriptional activation of β -catenin in DP cells was increased by adenosine in a luciferase assay. β -catenin is a co-activator of Wnt/ β -catenin signaling that induces morphogenesis and differentiation of hair follicles and also acts to transactivate downstream signaling pathways, including the ERK pathway. Using Western blotting, we found that adenosine stimulated phosphorylation of ERK, CREB and AKT. These results suggest that adenosine stimulates growth of hair follicles by triggering the expression of growth factors and β -catenin, and by inducing their downstream target signaling pathways.
