

Expression of androgen receptor, 5 α -reductase and 17 β -hydroxysteroid dehydrogenase in human dermal papilla cells

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In order to know whether adrenal and gonadal weak androgens are utilized to form active androgens in human hair, we studied the expression of androgen receptor (AR), 5 α -reductase and 17 β -hydroxysteroid dehydrogenase (17 β -HSD) in cultured dermal papilla cells (DPCs) from various body sites. AR was expressed with the order being male axillary hair \approx female axillary hair > Beard > occipital scalp hair. The expression of Type I 5 α -reductase is a ubiquitous property of DPCs. In DPCs from beard, a high level mRNA of type II 5 α -reductase was observed, which is in contrast to the undetectable level in DPCs from occipital scalp hair and axillary hair. Type II 17 β -HSD mRNA was strongly expressed in outer root sheath cells (ORSCs). DPCs except for male axillary hair, expressed no type II 17 β -HSD. On the other hand, type III 17 β -HSD mRNA was strongly expressed in beard and axillary DPCs, and was equally expressed in axillary DPCs from both sexes. ORSCs showed low level of the expression. mRNA Expression of type III 17 β -HSD in DPCs was not regulated by androgen in axillary DPCs. These results suggest that the sensitivity of hairs to androgen is partially controlled by the cell-site specific expression of AR, 5 α -reductase, and 17 β -HSD in DPCs.