Testosterone synthesized in cultured human SZ95 sebocytes derives mainly from dehydroepiandrosterone.

Abstract:

Human sebaceous gland possesses all the steroidogenic enzymes required for androgen synthesis. It remains unclear whether the testosterone produced in situ mainly derives from circulating dehydroepiandrosterone (DHEA) or from de novo synthesis utilizing serum cholesterol. Using testosterone radioimmunoassay, we found that testosterone was barely detectable in the supernatant of cultured human SZ95 sebocytes when cholesterol was added alone, indicating a low basal expression of steroidogenic acute regulatory protein (StAR) in SZ95 cells. Human chorionic gonadotropin and fibroblast growth factor-9 were as potent as forskolin in activating StAR to enhance testosterone production, while interleukin-1 beta, dexamethasone, insulin and insulin-like growth factor-1 showed no stimulatory effect. A two-fold increase of testosterone production was observed in supplementation of DHEA as compared to pregnenolone, progesterone or 17 alpha-hydroxyprogesterone. Based on our findings, testosterone synthesized in cultured sebocytes derived mainly from DHEA and inhibition of 3beta-hydroxysteroid dehydrogenase and 17beta-hydroxysteroid dehydrogenase may be a new target of androgen suppression for acne treatment.