# Saw Palmetto-Induced Inhibition of the 5ALPHA-reductase Pathway as a Clinical Treatment for PCOS Symptoms

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Polycystic Ovarian Syndrome (PCOS) is an endocrine disorder affecting millions of women worldwide. It is characterized by irregular periods, alopecia, hyperandrogenism, infertility, hirsutism, etc. PCOS is typically managed using hormonal birth control, and patients are prescribed a variety of medications for their individual symptoms. This experiment used Saw Palmetto Extract (SPE) to inhibit the 5-alpha reductase Pathway in Human Follicle Dermal Papilla Cells (HFDPC) in vitro. 5-alpha reductase is responsible for converting excess testosterone to dihydrotestosterone (DHT), which triggers the common clinical symptoms of PCOS. I hypothesized that SPE would decrease DHT production in HFDPC because SPE acts as an inhibition agonist of 5-alpha reductase, preventing the binding of DHT to cytosolic androgen receptors. The experimental groups employed 0.5 and 1.0 µL SPE and endogenous testosterone. Cell culture media was collected for control and experimental cultures for two incubation times. DHT ELISA assays quantified the DHT in the media taken from the experimental and control groups, comparing the DHT concentration of SPE cultures to non-SPE cultures. An ANOVA test demonstrated that cell cultures with SPE produced significantly less cellular DHT compared to a non-SPE control group, and an Emax model validated the pharmacodynamic capability of SPE as a 5-alpha reductase agonist and suggested that SPE was most effective at inhibiting DHT secretion when cells were treated with 1.0 µL SPE for four hours. As a preclinical study, this research demonstrates the promising potential of SPE to reduce DHT production in vitro as a clinical treatment for PCOS symptoms.

**Awards Won:**