

## Effects of tocotrienols on sperm parameters, testes weight and ultrastructure in Sprague Dawley rats

### ABSTRACT

Vitamin E is divided equally into 2 families, tocopherols and tocotrienols. Being an antioxidant, vitamin E has been reported to improve disorders related to oxidative damage in many organ systems. Sources of vitamin E can be found in many foods including palm oil which is rich in tocotrienols. Studies on the effects of vitamin E on male fertility have shown encouraging results. This study was conducted to observe the effects of feeding tocotrienols from palm oil to male Sprague-Dawley rats on sperm parameters, testes weight and sperm ultrastructure. Blood nitric oxide (NO) levels were also measured. Thirty-five rats were separated equally into 5 groups: initial group (sacrificed before experiment for base line values), control group (fed commercial pellets only), vehicle group (palm oil), low dose and high dose of tocotrienol treatment groups. The four groups were sacrificed at the end of the six weeks experiment and sperm parameters (motility, viability and count) were measured while sperm ultrastructure was observed via transmission electron microscopy (TEM). Cardiac blood was taken for NO analysis. Testes were also weighed. At high dose, it is found that sperm parameters increased significantly ( $p < 0.05$ ) but there was no significant change in NO readings. Testes weight does not show any changes while TEM showed lowered mitochondrial cristae distortion in both treatment groups. High dose of tocotrienol increase sperm parameters suggesting that the mechanism for better male fertility is related to better cristae membrane integrity in sperm.

**Keyword:** Effects of tocotrienols; Sperm; Parameters; Testes weight; Ultrastructure; Sprague Dawley rats