

Efficacy trial on the purified compounds of the seeds of *Carica papaya* for male contraception in albino rat.

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Source

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Abstract

The contraceptive efficacy and toxicological screening of the two principal compounds, MCP I and ECP I, isolated from the seeds of *Carica papaya*, in male albino rats at the standardized dose regimen, at 50 mg/kg b.w./day, for a period of 360 days and up to 90 days of treatment withdrawal have been reported. The body and organ weights, cauda epididymal sperm characteristics, androgen sensitive tissue biochemistry, reactive oxygen species and anti-oxidant defense system in the cauda epididymal microenvironment, histology and ultrastructure of testis and cauda epididymis, histology of seminal vesicle and prostate, toxicological investigations through routine hematology and serum clinical chemistry, sexual behaviour and fertility index have been studied. The results revealed that oral administration of MCP I and ECP I were equally effective, exhibiting complete inhibition of sperm motility following 90 days of treatment that coincided with a gradual and significant decline in cauda epididymal sperm density, percent viable spermatozoa and significant increase in sperm anomalies. Histology of testis of treated animals revealed degenerated germinal epithelium, vacuolization in Sertoli cells and proliferating germ cells and disturbances in spermatid differentiation. Spermatogonial stem cell reserves and Leydig cells appeared normal. Ultrastructure of the testis revealed vacuolization in the Sertoli cells and germ cells, loss of cytoplasmic characteristics in the Sertoli cells, nuclear degeneration and mitochondrial vacuolization in spermatocytes and spermatids. Leydig cells exhibited steroidogenic features. Cauda epididymis showed normal epithelial cell function. Absence of spermatozoa or disruption of spermatozoa clusters in the lumen were evident. Ultrastructure of cauda epididymis revealed normal secretory activity. Morphology of seminal vesicle and prostate of the treated animals were comparable to control animals. Serum testosterone, tissue biochemical and toxicological parameters remained unaffected. Fertility test revealed 100% efficacy. All the altered parameters showed sign of recovery following 90 days of treatment withdrawal. It is concluded that both MCP I and ECP I are equally effective in terms of contraceptive efficacy which is likely reversible and without adverse side effects.