

EFFECTS OF GLUTATHIONE DEPLETION ON MALE FERTILITY

(A prospective study on male Sprague Dawley rats)

BY

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DEDICATION

To Egie, Nellie Mwaurayeni, Laizah, Sarah and Witness

ABSTRACT

The objective of this study was to investigate the role of glutathione depletion on male fertility in rats. Forty male Sprague Dawley rats were divided into two groups. Twenty rats were administered paracetamol 10mg/2mls (glutathione depletor) intraperitoneally three times a day for 90 days and the other 20 rats received 0.9% normal saline intraperitoneally three times a day for 90 days. The rats were further divided into 5 groups of 4 rats each. 2 rats from each group (first 4 groups) were timeously sacrificed for histological studies, measurement of glutathione levels and sperm analysis at day 15, 30, 60 and 90 (terminal sampling). Concurrently another set of 2 rats from each group (first 4 groups) were also being analyzed for sperm, glutathione measurement, and fertility studies at day 15, 30, 60, and 90 but not killed (sampling throughout life).

The remaining four rats from each group were finally placed each in the same cage with a known fertile female rat for assessing fertility capabilities. The quality of semen was highly affected in the study group. There was significant ($p<0.05$) decrease in semen homogeneity and liquefaction time by day 30 of treatment, sperm motility dropped to below 20%, sperm progressiveness dropped to 0 by day 60. There was a significant ($p<0.05$) sperm morphological change with bent tail 75%, abnormal mid-piece 80% and Abnormal heads 70%. There was a significant ($p<0.05$) decrease in the ability of the sperm to fertilize the egg with the study group registering only 10% of the expected litter. There was also a significant ($p<0.05$) decrease in libido; number of mounting, copulatory efficiency, intromission and sexual vigor in the study group. This study have demonstrated that glutathione depletion affects male fertility, however accurate assessment of male fertility potential is a complex problem and insights into the potential causes of male infertility presents a challenge to both the clinician and the research scientist, especially as there are no overt clinical features to account for male fertility. However, more investigations are needed on male fertility factors and on the other possible causes of male infertility. In this study glutathione supplementation and further reassessment of fertility index was not done because the rats had almost reached their maximum reproductive age.

PUBLICATION RELATED TO THE THESIS

Micho1 M., Mohamed, H.E., Sewani-Ruskie C.R. and Mudambo K.S.M.T. 2009. Fertility indicators and glutathione status in Sprague Dawley rats. *JAPS* **4(1)**: 261-266