

Effects of Potassium Sorbate on Some Sexual Maturation Parameters in Immature Female Wistar Rats

Authors : Elisabeth Louise Ndjengue Mindang, Charline Florence Awounfack, Derek Tantoh Ndinteh, Rui W. M. Krause, Dieudonne Njamen

Abstract : The evolution of human fertility over the last 50 years has shown considerable problems due to a growing number of couples that find it difficult to procreate without medical assistance. In Africa, this inability to conceive affect 30 to 40% of couples. A number of contaminants in the environment are thought to contribute significantly to the observed infertility epidemic. Methods: On this basis, the impact of 40-days unique oral administration (between 9 and 10 am) of potassium sorbate (at of 12.5, 45, and 78 mg/kg BW doses) was evaluated on sexual maturation and hematologic parameters on immature Wistar rats (21-22 days of age). At the end of the treatment, animals were sacrificed. Vaginal opening was evaluated before the sacrifice. After the sacrifice, relative weight of reproductive organs, pituitary gonadotrophin level (LH and FSH), and sexuals steroids (estrogen and progesterone), cholesterol level in ovaries, folliculogenesis, and some hematological parameters were evaluated. Results: Compared to the control group, no significant variation was observed in the body weight of the animals treated with potassium sorbate. On the other hand, potassium sorbate, a significantly lower percentage (25%) of vaginal-opening in these rats, was observed from day 46 of age ($p < 0.01$); likewise, a significant decrease was observed on the relative weight of the ovaries ($p < 0.01$), number of primary follicles ($p < 0.01$), and a significant increase of follicle number ($p < 0.001$) at 78 mg/kg BW have been observed. Potassium sorbate always decreased the number of white blood cells ($p < 0.05$). Taken together, these results confirm the disturbing effects on the endocrine system, causing a decrease in fertility by increasing the number of follicles in atresia. A deleterious effect on the immune system was also observed. Overall, these results validate at least in part the global observations on the growing decline in fertility in populations feeding increasingly on industrial processed foods.

Keywords : potassium sorbate, early puberty, folliculogenesis, endocrine disruptor, immature wistar rat

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