

Ameliorative Effect of Curcuma Longa against Arsenic Induced Reproductive Toxicity in Charles Foster Rats

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Abstract : An estimated 70 million population are exposed to arsenic poisoning in India in recent times. Arsenic contamination in the groundwater has caused serious health hazards among the exposed population. In Bihar, the first district was Bhojpur, where arsenic causing health issues were reported in 2002. Presently, there are 18 districts that are reported arsenic poisoning in the groundwater. The exposed population is firstly diseased with various symptoms such as skin manifestations, loss of appetite, constipation, hormonal disorders, etc. The long duration exposure has led to cause infertility in the male subjects. The present study thus aims to develop the antidote against arsenic-induced male reproductive toxicity in animal models. The study was carried out on Charles Foster Rats after the approval from Institutional Animal Ethics Committee. A total of n=18 rats (12 weeks old) of an average weight of 160 ± 20 g were used for the study. The study group included n=6 control and n= 12 treated with sodium arsenite orally at the dose of 8mg/Kg b.w daily for 40 days. The n= 6 animals were dissected and the rest n=6 was administered orally with Curcuma longa rhizome ethanolic extract at the dose of 600mg/Kg b.w per day for 40 days. At the end of the entire experiment, all the animals were dissected out and their reproductive organs were taken out, especially epididymis for sperm counts, sperm motility, sperm mortality, sperm morphology. The blood samples were collected for the hormonal assay (testosterone and luteinizing hormone), as well as for hematological and biochemical analysis. The study showed a high magnitude of degeneration in the reproductive organs of the rats in the arsenic-treated group. There were degenerative fluctuations in the sperm counts, sperm motility, sperm mortality, sperm morphology and in the hormonal parameters, as well as in the hematological and biochemical parameters in the arsenic-treated rats. But, after the administration of Curcuma longa, there was significant amelioration in all these parameters. Therefore, the present study shows that Curcuma longa plays a vital role to combat arsenic-induced male reproductive toxicity.

Keywords : sodium arsenite, Charles foster rats, ethanolic rhizome extract of curcuma longa, male reproductive toxicity, amelioration

Conference Title : ICVPTT 2021 : International Conference on Veterinary Pharmaceutics, Toxicology and Therapeutics

Conference Location : London, United Kingdom

Conference Dates : June 28-29, 2021