ABSTRACT

A pilot study to evaluate the toxicity profile of escalating doses of the silver nanosolution in rats

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Objective: A pilot study to evaluate the toxicity profile of escalating doses of the silver nanosolution in rats.
Material and Methods: Inbred albino Wistar rats of either sex weighing between 150-200 g were divided into 4 groups, each containing 2 animals and fed with standard pellet diet and water *ad libitum*. Silver nanosolution was administered in three different doses, 0.5 ml, 1.0 ml, and 1.5 ml in the study groups and normal saline in the control group. The above doses were administered orally once a day for 28 days. Rats were observed daily for pharmacotoxic signs and food consumption, and individual body weights were measured weekly. At the end of the study the following haematological examinations and serum chemistry were done: haematocrit, haemoglobin concentration, erythrocyte count, total and differential leukocyte count, platelet count, blood clotting time, sodium, potassium, urea, creatinine, total protein and albumin, alanine aminotransferase and aspartate aminotransferase. All animals were subjected to histopathologic examination of brain, lungs, heart, liver and kidneys.
Results: Silver nanosolution showed no statistically significant differences in body weight, changes in food consumption, haematological examinations and serum chemistry as compared to the control group. No drug-related clinical signs or deaths occurred. At necropsy, organ weights were comparable in control and study groups with no silver nanosolution-related histopathologic changes were seen.
Conclusion: The above pilot study indicates that the escalating doses of silver nanosolution were safe in rats. However, further trials in humans are required to establish definitive strength of doses and levels of safety and tolerability.

KEYWORDS: Silver nanosolution, Histopathologic examination.