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Safety evaluation of Lokanatha Rasa, an ayurveda mercurial preparation, using Wistar rats

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Mercury is a toxic, heavy metal that can cause serious and lasting health problems for humans and the environment. Rasa Shastra in Ayurveda uses mercury as its chief ingredient and Lokanatha Rasa (LKN) is one such preparation referenced in traditional Ayurveda texts. It is prescribed to treat liver and spleen disorders. There are numerous arguments regarding mercury based preparations at present. This study aimed to evaluate the effect of LKN on body organs. This animal study compared 36 male and female Wistar rats. Since the human dosage of LKN is 250mg per day, the equivalent dose range for rats according to their weight (15mg/kg, 45mg/kg, 60mg/kg, and 90mg/kg) was delivered to the test animals by oral gavage while water was given to the controls for 90 consecutive days. The hematological, histological and biochemical parameters were assessed. The generated data was statistically analyzed using SPSS version 26.0. The hematological parameters (total WBC, neutrophil%, lymphocyte%, monocyte%, eosinophil%, basophil%, hemoglobin, RBC, Mean cell volume, hematocrit%, mean cell hemoglobin, MCHC, red cell distribution width, platelet count) and biochemical parameters (fasting serum glucose concentration, liver enzymes [AST, ALT, γ -GT, ALP], renal enzymes [total protein, creatinine, urea], lipid profile parameters [TC, HDL-C, TG, LDL-C, VLDL-C]) did not differ significantly ($p>0.05$) between the test and control groups. Histopathology of the liver, kidney, spleen, lung, and intestinal tissues of the test group also did not differ significantly from the control group ($p>0.05$). Selected vital tissues were observed in all the treatment groups and no signs of hemorrhage, inflammatory cell infiltration, or necrosis were observed. The current study's findings demonstrate that the mercurial-based LKN administered for consecutive 90 days did not cause any toxicological changes in the liver, kidney, spleen, intestines, or lungs.

Keywords: Hematological and biochemical parameters, Histopathology, Lokanatha Rasa, Mercurial preparation

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