

## Abstract

Trapa bispinosa, a widely recognized aquatic plant that is often consumed due to its perceived health-promoting properties. The primary objective of this study was to conduct a comprehensive analysis of the chemical constituents present in Trapa bispinosa and evaluate its suitability for animal consumption in terms of safety. In order to assess the safety of Trapa bispinosa, toxicity experiments were done on animal subjects, encompassing both acute and chronic exposure durations. The standard protocols for conducting acute and sub-acute toxicity studies on rodents were adhered to in our study. The findings were comforting, as no statistically significant indications of acute toxicity were seen in rats following exposure to Trapa bispinosa. No adverse effects on vital organs or hematological markers were observed throughout the sub-acute toxicity evaluations. Furthermore, the plant extract exhibited a very low LD<sub>50</sub> value 4.1 g/Kg, suggesting a diminished potential for inducing acute toxicity. Additionally, we investigated the impacts of extended exposure to Trapa bispinosa on animal models. The aforementioned research did not observe significant alterations in body weight, whereas the hematological parameters such as erythrocyte and platelets did not change significantly while hematocrit and haemoglobin values were significantly increased among animals that were subjected to prolonged exposure to the plant extract TBMe. T. bispinosa leads to increase levels of biochemical parameters such as glucose and creatinine while liver function markers (ALP, SGOT, SGPT) and total bilirubin levels were also increased significantly. The plant extract was subjected to microscopic inspections of important organs, which provided additional confirmation that it did not elicit any adverse tissue alterations but only substantial sinusoidal congestion and hepatocyte cellular edema in their liver tissues was observed. According to our research findings, the substance has a satisfactory safety profile, as no substantial adverse effects were detected in animal trials. However, additional research is necessary to explore the unique health-related characteristics and underlying mechanisms of action associated with this plant species.