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Determination of biocompatibility of *Carmona retusa* (vahl.) Masam using brine shrimp and zebrafish assays (FET 293)

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Carmona retusa, known as 'Heen thambala' is a traditional medicinal plant in the Boraginaceae family, valued for its therapeutic properties against various ailments. Despite its traditional significance, its usage in Sri Lanka is limited. This study aimed to assess the toxicological and biocompatibility aspects of *Carmona retusa* using two bioassays. Brine shrimp lethality assay (BSLA) was conducted, exposing brine shrimp nauplii to different concentrations (100 - 500 µg/ml) of the aqueous extracts of the plant along with a control. The results revealed LC50 values of 3025 µg/ml after 24 hours (non-toxic) and 527.4 µg/ml after 48 hours (toxic), based on Meyer's toxicity index. Zebrafish assay (FET 293) was done by exposing embryos to the different concentrations (100 - 500 µg/ml) of the plant extracts. The hatch rate, survival rate, heart rate and development deformities were observed at specific time intervals (24, 48, 54, 72, 80 and 96 hpf). Hatch rates decreased with increasing extract concentrations, reaching 100% at 96 (hpf) for concentrations up to 300 µg/ml. Higher concentrations (400 and 500 µg/ml) showed 80% and 70% hatch rates respectively. Survival rates remained constant until 72 hpf, significantly decreasing at 96 hpf in the embryos exposed to 400 and 500 µg/ml. Heart rates (beats/min) slightly increased at 72 hpf and 96hpf for all concentrations but remained within the normal range. Deformity analysis identified yolk sac oedema as the primary effect with 100 µg/ml showing non-structural deformities and higher concentrations displaying yolk sac oedema. The study concludes that *C. retusa* exhibits moderate toxicity in zebrafish embryos.

Keywords: Biocompatibility, BSLA, *Carmona retusa*, toxicity

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