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DEVELOPMENTAL STAGE-SPECIFIC ACUTE TOXICITY AND BIOCOMPATIBILITY OF *Argyreia populifolia* AQUEOUS PLANT EXTRACT IN ZEBRAFISH (*Danio rerio*): A FET236 BIOASSAY-BASED EVALUATION

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Medicinal plants have long served as a foundation for therapeutic discovery, due to their rich phytochemical diversity and broad-spectrum bioactivity. *Argyreia populifolia,* commonly known as 'Girihilla' in Sinhala, belongs to Family Convolvulaceae and is a native plant to Sri Lanka. It is widely used in various Ayurvedic preparations for conditions such as diabetes mellitus, dog bites, and asthma. However, the toxicity profile of the aqueous extract has not yet been investigated. Therefore, the present study aimed to evaluate biocompatibility and acute toxicity using the zebrafish embryo assay (FET236) according to the OECD guideline. Wild-type zebrafish were maintained at 27 ºC under regulated levels of pH (7±0.5), nitrates (< 0.009 g L^{-1}), nitrites (8 – 12 g L^{-1}), and ammonia (< 0.005 mg L^{-1}). *Argyreia populifolia* aqueous plant extract was prepared using aerial parts via the maceration method, and dilutions from 2 mg mL^{-1} to 1000 mg mL^{-1} were made. As per OECD guideline, ten fertilized eggs per concentration were exposed and tested in triplicate, using tank water as the control. Hatch rate, mortality rate, survival rate, heart rate, and developmental deformities were assessed at 48, 54, 72, 80, and 96 hours post fertilisation (hpf). Data were analysed with two-way ANOVA and Dunnett's test using GraphPad Prism 9 software. Hatchability decreased with increasing concentrations of *A. populifolia* extract, peaking at 2 mg mL^{-1} at 96 hpf. Survival rate followed a similar trend, dropping to 0% at ≥ 16 mg mL^{-1} from 72 hpf. Heart rate remained normal until 4 mg mL^{-1}, and a 100% survival rate was observed at 72 hpf. The LC_{50} was calculated as 1.57 mg mL^{-1}. Observed deformities included yolk sac edema (35%), pericardial edema (21%), lack of pigmentation (41%), and lack of somite formation (29%). These findings indicate moderate toxicity at lower concentrations, with minimal effects at 2 mg mL^{-1}. Therefore, further phytochemical analysis and isolation of active compounds are recommended to identify safer components for potential therapeutic or commercial applications.

Keywords: Acute toxicity, *Argyreia populifolia,* Biocompatibility, FET assay, Zebrafish embryo