

Evaluation of Acute Toxicity of Different Solvent Extracts of *Leucas zeylanica* Using the Brine Shrimp Lethality Assay

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Leucas zeylanica, which belongs to the family Lamiaceae, also referred to as “Geta Thumba”, is a medicinal plant that is widely used in Sri Lankan traditional Ayurvedic medicine to treat respiratory conditions, diabetes, inflammation, and skin diseases. There is limited information on its toxicity profile despite its widespread therapeutic use. Therefore, the present study aims to evaluate the toxicity of the whole plant of *L. zeylanica* using the brine shrimp lethality assay as a preliminary screening method. The air-dried plant materials were powdered and extracted into distilled water, methanol, and ethyl acetate using the maceration technique. The dilution series was made using a two-fold dilution starting from 100 mg/mL up to 10 different concentrations. To produce active nauplii, brine shrimp (*Artemia salina*) eggs were added to artificial seawater, placed under constant lighting and aeration for 24 hours. Each test tube contained ten live nauplii with the different concentrations of plant extracts, positive control (potassium dichromate), and negative control (seawater). Live nauplii were counted after a 24-hour exposure period, and the mortality percentage was calculated. In the brine shrimp lethality test, *L. zeylanica* methanol and aqueous extracts showed dose-dependent cytotoxicity. With almost 100% mortality at the highest concentrations. The ethyl acetate extract exhibited the 100% mortality because of the solvent toxicity. The LC₅₀ value of the aqueous extract and methanol extract was 1.323 mg/mL and 1.446 mg/mL, respectively. The comparatively lower toxicity of the methanol extract may indicate a lower concentration or absence of highly active compounds. To discuss the results of the assay, Meyers’ or Clarkson’s toxicity scale (If the LC₅₀ < 1000 µg mL⁻¹, consider as toxic and LC₅₀ > 1000 µg mL⁻¹ consider as nontoxic) was used. However, the brine shrimp lethality test revealed no toxicity from *L. zeylanica* plant extract, indicating its relative safety for traditional use. To establish its safety and pharmacological potential, more research is advised, including cytotoxicity tests, *in vivo* models, and bioactive component isolation.

Keywords: Brine shrimp lethality assay, LC₅₀, *Leucas zeylanica*, Toxicity