



Investigation of Cytotoxicity by Brine Shrimp Assay and Total Phenolic Content of *Flueggea leucopyrus* (Willd.)

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Abstract

Flueggea leucopyrus (Willd.), commonly known as Katupila in Sinhala belongs to the family Euphorbiaceae. The leaves, stem and roots of the plant have been used as complementary and alternative medicine for many health problems including cancer. This study was carried out to determine the total phenolic content of the aqueous and methanolic extracts of leaves and bark of *F. leucopyrus* (Willd) and to investigate the cytotoxicity of those extracts towards normal cells. Methanolic extracts of the leaves and bark were prepared using maceration process and the aqueous extracts of the plant were prepared by soxhlet extraction method. Cytotoxicity was investigated by carrying out Brine shrimp (*Artemia salina*) assay. The LC_{50} values were obtained using graphical methods. It showed that LC_{50} values for aqueous extract of bark and leaves were 400.6 $\mu\text{g/mL}$ and 2058.3 $\mu\text{g/mL}$ respectively and LC_{50} values for the methanolic extract of leaves and bark were 2779.6 $\mu\text{g/mL}$ and 8567.3 $\mu\text{g/mL}$ respectively. The total phenolic contents were determined by Folin-Ciocalteu reducing capacity and expressed as mg/g gallic acid equivalent using the standard curve equation ($y = 0.0135x + 0.029$, $R^2 = 0.9979$). The total phenolic contents of methanolic extract of leaves and aqueous extract of leaves were 38.5 ± 0.3 and 34.9 ± 0.5 respectively and aqueous extracts of bark and methanolic extract of bark were 29.9 ± 0.1 mg/g and 1.4 ± 0.1 respectively in gallic acid equivalents. As this investigation showed $LC_{50} > 30 \mu\text{g/mL}$, the leaves and bark extracts of *F. leucopyrus* (Willd.) do not possess any cytotoxic properties against normal cells. Many medicinal properties including anti-cancer properties of *F. leucopyrus* (Willd.) could be attributed to the presence of significant amount of Phenolic compounds in the plant.

Keywords: cytotoxicity, *Flueggea leucopyrus* (Willd.), LC_{50} (Lethality concentration), total phenolic content

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