COMPARISON OF ANTI-OXIDANT PROPERTIES AND PHYTOCHEMICAL PROPERTIES OF DIFFERENT PARTS OF *Aegle marmelos (l.) corr*. IN SRI LANKA

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This study is focused on evaluating the antioxidant potential of *Aegle marmelos* (L.) Corr. *(Rutaceae)*, commonly used plant in Ayurveda medicine. In this research, powdered samples of leaves, stem bark, and root bark were obtained from five geographical locations in Sri Lanka (Colombo, Kegalle, Galle, Matale and Puttalam) and their anti-oxidant properties and phytochemical properties were compared. Antioxidant activity was assessed using DPPH radical scavenging method, with ascorbic acid (IC_{50} = 2.8469 ppm) as the standard and absorbances were measured at 517 nm. Phytochemical properties of methanol extracts of these samples were determined using Thin Layer Chromatography (TLC). The solvent system for leaf extracts was Toluene: Ethyl acetate: Formic acid: Methanol (3:3:0.8:0.2), and for stem and root bark extracts, it was Toluene: Ethyl acetate: Chloroform: Hexane: Methanol (2:2:1:4:1). Chromatograms were visualized under UV at 366 nm using High-Performance Thin Layer Chromatography (HPTLC). The highest IC_{50} for leaf extracts (16.0820 ppm) was from Colombo, and the lowest (14.8556 ppm) from Puttalam. For stem bark, the highest (22.0600 ppm) was in Kegalle, and the lowest (20.5032 ppm) in Matale. Root bark extracts showed the highest IC_{50} (26.9714 ppm) in Puttalam and the lowest (25.0891 ppm) in Galle. A prominent compound with Rf 0.22 was present in all plant parts, while two compounds with Rf 0.22 and 0.55 were shared between the stem and root bark. The band intensity and number of compounds differed among locations. These findings highlight the importance of geographical and environmental factors on its chemical properties and therapeutic potential.

Keywords: Anti-oxidant properties, *Aegle marmelos*, HPTLC, Methanol Extracts, DPPH assay