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In vitro* anti-arachidonate 5-lipoxygenase, anti-hyaluronidase and antioxidant activities of ethanolic leaf extract of *Argyria populifolia

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The inhibitors of Arachidonate 5-Lipoxygenase (A5-LOX) and hyaluronidase enzymes have gained a high therapeutic value in the treatment of inflammatory diseases. Medicinal plants remain as potent sources of new enzyme inhibitors and antioxidants. *Argyriapopulifolia* (Convolvulaceae) is a common medicinal plant, endemic to Sri Lanka, used for the treatment of various diseases including inflammatory diseases in the Sri Lankan folklore. The objective of the present study is to investigate *in vitro* anti-A5-LOX, anti-hyaluronidase and anti-oxidant properties of ethanol leaf extract of *A. populifolia*. The air-dried, powdered leaf of *A. populifolia* was extracted with ethanol using cold extraction technique. *In vitro* anti-inflammatory activity was determined by A5-LOX and hyaluronidase enzyme inhibitory assays. Anti-oxidant activity was determined by DPPH free radical scavenging, Ferric Reducing Anti-oxidant Power (FRAP), Ferrous Iron Chelating (FIC) and Oxygen Radical Absorbance Capacity (ORAC) assays. The Total Phenolic Content (TPC) and Total Flavonoid Content (TFC) were also determined. The ethanol leaf extract of *A. populifolia* showed a moderate anti-A5-LOX activity, having the IC₅₀ value of 150.8 ± 1.5 µg/mL in comparison to Baicalein (1.55 ± 0.24 µg/mL) and exhibited hyaluronidase enzyme inhibition of 16.3 ± 0.7% at 500 µg/mL in comparison to Tannic acid (90.3 ± 0.8% of inhibition at 500 µg/mL). The extract exhibited moderate DPPH free radical scavenging activity (IC₅₀=291.6 ± 5.4 µg/mL, Trolox: 5.29 ± 0.09 µg/mL) and ORAC (476.2 ± 31.8 mg TE/g), in comparison to that of green tea extract (1662.82 ± 0.22 mg TE/g). The extract showed low FRAP (265.1 ± 2.2 mg TE/g) with no FIC activity. The TPC and TFC were found to be 10.59 ± 1.16 mg Gallic Acid Equivalents (GAE)/g and 21.79 ± 0.39 mg Quercetin Equivalents (QE)/g respectively. The anti-A5-LOX, anti-hyaluronidase and anti-oxidant activities of leaf extract of *A. populifolia* were significantly different from the respective reference standards (P<0.05). This is the first report of A5-LOX and hyaluronidase related anti-inflammatory activities and anti-oxidant activities of ethanol leaf extract of *A. populifolia in vitro*. The present study may provide impetus to search for novel anti-inflammatory compounds from this plant and supports the traditional claims.

Keywords: *Agyria populifolia*, anti-arachidonate 5-lipoxygenase, anti-hyaluronidase, antioxidant

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