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Pharmacognostical Investigation of *Andrographis paniculata* (Green Chiretta) and Crystallization of the Bioactive component Andrographolide

Myrene R. Dsouza[1*], Sapam Athoibi[1], Shashi Prabha[1]

[1]Department of Biochemistry, Mount Carmel College Autonomous, Bengaluru, India

Abstract : *Andrographis paniculata* (Family: Acanthaceae) is one the most commonly used ethno-medicinal plants in certain parts of Asia and European countries. The phytochemical analysis of the leaves of *A. paniculata* in aqueous, methanolic, ethanolic, hydromethanolic (1:1) and hydroethanolic (1:1) extracts revealed the presence of carbohydrates, amino acid, alkaloids, saponins, tannins, flavonoids, terpenoids, glycosides, xanthoproteins and phenols. The total phenolic, flavonoid contents and FRAP values were found to be highest in the hydromethanolic extract i.e., 0.23 ± 0.008 mg GAE/g of FWt, 0.031± 0.00 mg QE/g FWt and1.261 ± 0.03 mM $FeSO_4$ respectively. *Invitro* antioxidant capacity by linear regression analysis was measured by assaying DPPH radical and H_2O_2 scavenging capacities. The respective IC_{50} values of the hydromethanolic extract of the plant were found to be 86.51 µg/ml and 298.27 µg/ml. The IC_{50} values for *in vitro* anti-inflammatory activities were evaluated by heat induced protein denaturation ($IC_{50\ diclofenac}$ = 574.06 µg/ml, $IC_{50\ APE}$ = 179.7 µg/ml) and RBC membrane stabilization assay ($IC_{50\ diclofenac}$ = 337.64 µg/ml, $IC_{50\ APE}$ = 143.07 µg/ml). The IC_{50} values for *in vitro* anti-diabetic activities were evaluated by α-amylase inhibition ($IC_{50\ acarbose}$ = 379.71 µg/ml, $IC_{50\ APE}$ = 328.54 µg/ml). In addition, glucose diffusion was also monitored. Antimicrobial activity of the extracts was studied against common pathogens using well diffusion method. The purification of Andrographolide was carried out using different physical separation techniques such as extraction and crystallization followed by drying.

Keywords: *A. paniculata*, andrographolide, anti-inflammatory, antioxidant, crystallization, hypoglycemia.

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