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# Phytochemical Analysis of Selected Medicinal Plants Belonging to Family Fabaceae

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## Abstract

Many plants from the Fabaceae family have long been used for their pharmacological and protective properties, gaining popularity for commercial and academic purposes. Therefore, a study was conducted to evaluate the phytochemical potential of eight high-value species from the Bangladesh Agricultural University Botanical Garden namely: Lojjaboti (*Mimosa pudica* L.), Krisnachura (*Delonix regia* (Bojer ex Hook.) Raf.), Edanchi (*Senna tora* (L.) Roxb.), Kolka-sunda (*Senna occidentalis* (L.) Link), Koroi (*Albizia lebbeck* (L.) Benth.), Karanja (*Pongamia pinnata* (L.) Pierre), Shingra (*Cynometra ramiflora* L.) and Rati (*Abrus precatorius* L.). Total phenolic content (TPC), total flavonoid content (TFC), total antioxidant capacity (TAC) and major pigments (chlorophyll a and b, total carotenoids) were measured using standard protocols. The findings indicated that *S. tora* had the highest TPC (15.999 mg GAE/g DW) and total antioxidant capacity (TAC) with 8.25 mg AA/g FW, while *A. lebbeck* exhibited maximum TFC (27 mg QUE/g DW). *M. pudica* had the highest levels of chlorophyll a and total chlorophyll (a+b), with 1.58 mg/g FW and 2.62 mg/g FW, respectively. *D. regia* leaf showed the highest amount of chlorophyll b (1.81mg/g FW) and carotenoids content (4.52 mg/g FW). Significant positive relationships were found between different phytochemicals such as TPC and TAC; total chlorophyll and total carotenoids, while a non-significant relationship was found between TAC and other pigments. The species were categorized into three clusters and the phytochemicals were grouped into two groups. Variations were observed among all the species, but *S. tora* and *M. pudica* were placed into cluser-1 containing highest phytochemical contents while *C. ramiflora* showed lowest phytochemicals which placed into cluser-3 and remaining others were in cluster-2. These findings suggested the potential of these plants as promising sources for medicine development, with their bioactivity supporting their strong recommendation for their use in traditional medicine.

***Keywords:*** *Fabaceae; Phytochemicals; Medicinal Plants; Total Phenolic Content; Total Flavonoid Content; Total Antioxidant Capacity.*