

English Summary

Phytochemical Study of Certain Plants Containing Flavonoids Belonging to Family Leguminosae

Phytochemical screening of the organs of *Dalbergia paniculata* and *Caesalpinia pulcherrima* revealed the presence of carbohydrates and/or glycosides, sterols and/or triterpenes and flavonoids in all organs of the two plants; flavonoids are the major constituents of bark and leaves of *D. paniculata* Roxb. and aerial parts of *C. pulcherrima* Swartz. Tannins are present in low concentration in bark and leaves of *D. paniculata* and aerial parts of *C. pulcherrima*. Saponins are present in low concentration in bark and leaves of *D. paniculata*. Crystalline sublimate, volatile constituents, alkaloids, anthraquinones and cardiac glycosides are absent in the two plants.

Quantitative estimation of total flavonoids revealed that leaves of *D. paniculata* contain the highest percentage of flavonoids (1.51 g %), followed by the bark (0.83 g %), the aerial parts of *C. pulcherrima* (0.70 g %) then the seeds of *D. paniculata* (0.68 g %).

Five isoflavonoids were isolated and identified from *D. paniculata* by studying their chromatographic and spectral characters (UV, MS, ¹H-NMR, ¹³C-NMR, IR) as: biochanin A, genistein, sissotrin, dalpatein and formononetin.

HPLC determination of individual isoflavonoids isolated from *D. paniculata* Roxb. revealed that the bark contains the highest percentage of each of the two isoflavonoids; biochanin A and genistein (1.07 and 0.35 g%) respectively, the leaves contain the highest percentage of formononetin (0.53 g%) and dapatein is present only in the leaves (0.48 g %).

The LD₅₀ of the alcoholic extracts of the bark and leaves of *D. paniculata* and the aerial parts of *C. pulcherrima* was found to be 5 gm/kg b.wt. The antioxidant activity revealed that Free radical-scavenging activity of the alcoholic extract of the leaves with % inhibition value of 68.46 % was superior to those of all tested samples, being almost equal to that of the positive control ascorbic acid (68.7%). Also dalpatein which isolated from *D. paniculata* leaves exhibited the highest antioxidant activity (65.84%) over the other isolated isoflavonoids. Other samples had % inhibition values between 19.3% and 68.1%, and revealed significant antioxidant activity of the alcoholic extract of *C. pulcherrima* aerial parts on diabetic rats followed by *D. paniculata* leaves at tested dose (100 mg/Kg) compared with the saline control. The hydroalcoholic extract of *C. pulcherrima* aerial parts showed a significant activity against breast carcinoma cell line (MCF7) with IC₅₀ = 3.77 µg/ well, and need more investigation, but showed non significant activity against liver carcinoma cell line (HEPG2) using the tested concentrations. *D. paniculata* bark and leaves showed significant activities against liver carcinoma cell line (HEPG2) with IC₅₀ = 9.40 and 9.90 µg/ well respectively. However a non significant activity was observed against breast carcinoma cell line (MCF7).

The antibacterial activity revealed that the alcoholic extracts of *D.paniculata* bark and leaves and *C. pulcherrima* aerial parts showed strong activities against *Pseudomonas syringae* and *Vibrio fluvialis*. Extracts of *D. paniculata* and *C. pulcherrima* showed strong activities against *Pseudomonas fluorescence*. Only *D. paniculata* leaves extract showed strong activity against *Erwinia cartovora*. Biochanin A and formononetin showed strong activities against *Pseudomonas syringae* and *Vibrio fluvialis*, and no activity against *Pseudomonas fluorescence*, *Serratia arubidea*, *Erwinia cartovora* and all gram positive bacteria.