ABSTRACT

In the present study, four plants have been subjected to phytochemical investigation with a view to isolate and characterize the flavonoidal constituents present in them. The plants investigated are *Rivea hypocrateriformis*, *Sarcostemma brevisligma*, *Ecbolium viride* and *Clerodendrum philippinum*. All these plants are used in local health traditions for treatment of various ailments.

A systematic phytochemical investigation of ethylacetate fraction of 80% alcoholic extract of the flowers of *R. hypocrateriformis* (Convolvulaceae) yielded RI-1 which was characterized as luteolin 6-prenyl 7-O-rhamnoside while n-butanol fraction of this plant yielded RI-2 which was found to be luteolin 5-methyl ether 7-0-(4''-p-coumaroyl) neohesperidoside. The identity of these compounds have been established by UV, $^1$H NMR, $^{13}$C NMR, DEPT 90, DEPT 135, $^1$H-$^1$H COSY, HSQC, HMBC and EI-MS methods. The plant is hitherto not investigated phytochemically and this is the first report of isolation of phytoconstituent from this plant.

The phytochemical investigation of ethyl acetate traction of aqueous ethanolic extract of *S. brevisligma* of Asclepiadaceae yielded SA, which was characterized as quercetin 5'-prenyl 3-O-glucosyl, 7-0-(4''-p-coumaroyl) neohesperidoside. The identity of this compound has been established by UV, $^1$H NMR, $^{13}$C NMR, $^1$H-$^1$H COSY, HSQC, HMBC and EI-MS.

Compounds EC-1, EC-2 and EC-3 isolated from ethyl acetate fraction of 80% alcoholic extract of *E. viride* (Acanthaceae) were characterized as apigenin
8-C glucoside (vitexin), luteolin 7-0-(2"-sinapoyl) glucoside, luteolin 7-0-(4"-senecioyl) neohesperidoside respectively. The identity of these compounds have been established by UV, ¹H NMR, ¹³C NMR and EI-MS studies. This investigation confirms the earlier view that flavone is the characteristic constituent of this family.

Compound CL isolated from ethylacetate fraction of ethanolic extract of *C. philippinum* (Verbenaceae) was characterized as apigenin 5-methyl ether, 3-prenyl 7-O-rhamnoside. The identity of the compound was established by UV, ¹H NMR, ¹³C NMR and EI-MS.

The ethylacetate fraction of the hydroalcoholic extract of the flowers of *R. hypocrateriformis*, *S. brevistigma*, *C. philippinum* and roots of *E. viride* were screened for their pharmacological activities. The LD₅₀ and ED₅₀ values of the test drugs were determined in order to find out the safe dose of administration of the test drugs. All these drugs did not show 50% mortality even at a dose of 5000mg/kg when given orally.

The anti-nociceptive activity of ethyl acetate fraction of the four chosen plants have been investigated. As evident from the results obtained from the hot plate method and acetic acid induced abdominal constriction assay, the plant extract of RLIF, SBF, EVR and CPF produces significant anti-nociceptive activity in a dose dependent manner.

The ethyl acetate fraction of RHF, SBF, EVR and CPF have been found to exhibit significant anti-inflammatory activity in a dose dependent manner, when tested by carrageenin induced rat paw edema method and cotton pellet granuloma method.
The extracts of these plants also showed greater hepatoprotective effect at a dose of 250mg/kg and the values were comparable to those of silymarin, the standard drug used in the study. A significant reduction in liver weight supported these findings. Histopathological studies too offered direct evidences for the efficacy of these drugs as hepatoprotective agents. The lesions developed on CCl₄ administration were found to be normalized with near normal histoarchitecture of liver cells in standard drug and extract (RHF, SBF, EVR and CPF) treated groups.

The extracts obtained from RHF and SBF were evaluated against Dalton’s ascites lymphoma (DAL) and Ehrlich ascites carcinoma (EAC). In both types of tumour bearing mice the altered haemotological parameters such as haemoglobin content, erythrocyte count, total leucocyte count and total protein were brought back to normal when treated with RHF and SBF like in the case of the treatment with standard viz., 5-fluorouracil.

The possible biochemical mode of action of the flavonoid glycosides isolated from the four chosen medicinal plants were studied through in-vitro lipid peroxidation assay. Of all the seven flavonoid glycosides RI-1, RI-2, SA, EC-1, EC-2, EC-3 and CL studied, the compound SA showed highest lipid peroxidation inhibition than the other glycosides.

The flavonoid glycosides of the four chosen plants RI-1, RI-2, SA, EC-1, EC-2, EC-3 and CL were also tested for anti bacterial activity using the Gram-positive and Gram-negative organisms. Results revealed the anti-bacterial activity of these compounds against Gram-positive organisms.