

Pharmacognostical, phytochemical and pharmacological studies in *Rauvolfia tetraphylla* L.

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SUMMARY

In the present study leaves of *Rauvolfia tetraphylla* L. were collected and analysed for the pharmacognostical, phytomicrographs, phytochemical and antimicrobial properties. Analytical values of leaves like total ash, water soluble ash, acid insoluble ash, sulphated ash and fluorescent analysis of the plant showed colour characteristics in both visible and ultra violet light. Cold extracts of the plants samples showed the presence of compounds for carbohydrates, alkaloids, tannins and phenols and flavonoids and absence of fixed oil and saponins. The extract exhibited positive antimicrobial activity against bacteria (*E. coli* and *Klebsiella pneumoniae*) and fungi (*Aspergillus flavus* and *Fusarium indicus*).

Key words :

Rauvolfia tetraphylla L.,
TLC profile,
Fluorescent
behaviour,
Biological
compounds,
Thytocomponents

The main source of drugs for Indian system of medicine, majority of the Indian population depends on phytomedicine for their primary health care in this modern scientific world. In Indian flora, *Rauvolfia tetraphylla* L. (Family: Apocynaceae) is a small branched woody shrub cultivated in garden. Ethanobotanically, the extract of this herb mixed with castor oil is applied to skin diseases (Chaudhuri, 1965; Kannabiran and Krishnamoorthy, 1972; Ahmed, 1994). This plant is mainly used in major diseases, anti-hypertensive, sedative, antihelmentic (against worms), intestinal disorder, diarrhea and dysentery.

MATERIALS AND METHODS

The aerial parts of *Rauvolfia tetraphylla* L. were collected from Thiruvavur. Collected specimens were carefully examined and identified with the help of regional floras (Kirithkar and Basu, 1980). Specimens were further confirmed with reference to herbarium sheet available in the Botanical Survey of India, Southern Circle, Coimbatore.

Pharmacognostical, phytomicrographs (Esau, 1964), powder preparation (Hardorne, 1973), total ash, water – soluble ash, acid – insoluble ash and sulphated ash (Anonymous, 1996; Kokate, 1994), powder analysis (Kokoshi *et al.*, 1985; Chase and Pratt, 1949; Key, 1938; Johansen, 1940), Phytochemical – alkaloids, carbohydrates, tannins and phenols, flavonoides, gum and mucilage, fixed oils and fats, saponins

and phytosterol (Kokate, 1994), total terpenoid (Ferguson, 1956), total alkaloids (Ferguson, 1956) were estimated.

Total alkaloids (TA), total terpenoides (TT), total glycoside (TG), alcohol, water and 50% alcohol extracts of the powdered drugs of all four samples were carried out. The chromatograms were observed under UV and visible light. The R_f value of the band can be obtained by using the following formula.

$$R_f = \frac{\text{Distance traveled by substance (cm)}}{\text{Distance traveled the mobile phase (cm)}}$$

The aqueous extract was examined in GC-MS. The antimicrobial activity was carried out by the method of Bauer *et al.* (1996).

RESULTS AND DISCUSSION

Quantitative microscopical analysis of *R. tetraphylla* was carried out as stomatal index, stomatal frequency, vein-islet number, vein termination and palisade radia measured (Table 1). Analytical values of *R. tetraphylla* like total ash, water soluble ash, acid-insoluble ash, sulphated ash solubility in alcohol, water and extractive values of water. Analytical values of leaves as water soluble extractive ash are higher (18.98 %) to total ash (16.45%) and sulphated ash was higher (16.99%) compared to acid insoluble ash (1.40%). Solubility percentage of leaves parts of *R. tetraphylla* in water is higher (16.81%). When compared,

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