

**STUDIES ON SOME PHARMACOGNOSTICAL PROFILE OF
FICUS RACEMOSA LINN (FAM. MORACEAE) LEAVES**

Subhash C. Mandal Pulok K. Mukherjee, Kakali Saha,

M. Pal And B.P. Saha

Department of Pharmaceutical Technology, Faculty of Engineering and Technology Jadavpur University
Calcutta - 700032**Received: 26th January, 1997****Accepted 22nd June, 1999**

Abstract: *The Macroscopic character of the leaves ash values, extractive values, behaviors on treatment with different chemical reagents, fluorescence characters under ultra violet light after treatment with different chemical reagents of the powdered leaves of ficus racemosa Linn (fam. Moraceae) were studied to fix some pharmacognostical parameters. Preliminary phytochemical studies on different extractives of the leaves were also performed. These studies will help in future for identifying this plant for further research.*

INTRODUCTION:

Ficus racemosa Linn Syn *Ficus glomerata* Roxb (fam Moraceae) is a well known moderate sized to large spreading tree distributed throughout the greater part of India in most localities, also found on rocky slopes, often cultivated in the villages of west Bengal, India, for its edible fruits (anonymous 1952). The leaves of *Ficus racemosa* are used in dysentery, bilious affection, and as a mouth wash in spongy gum, roots are used in dysentery and diabetes fruits are used as stomachic, carminative and also used in dysentery, menorrhagia as a mouth wash in spongy gum and in haemoptysis, it's milky juice is used in piles and diarrhoea (Nadkarmi et al ., 1976; Chopra et al, 1958; Kirtikar and Basu 1975).

Considering its various therapeutic efficacy and use in traditional practices in India it was thought desirable to fix some pharmacognostical parameters for further identification on the plant material. That is why the present study was undertaken which deals with the studies on some important pharmacognostical properties of the leaves

as a whole and its powdered form are being reported hereunder.

MATERIAL AND METHODS

Plant Material: the leaves of *Ficus racemosa* were collected from Hetyasole, Bankura district of west Bengal India, during the month of July and August. Taxonomic identification of the plant (reference No. CNH/ 7-3 (20)/ Tec.II/ 995/239) was performed by central national Herbarium, Botanical survey of India, Shibpur, Howrah. The specimen sample as been kept in our laboratory for future reference. The leaves were shade dried, pulverized by a mechanical grinder passed through a 40 mesh sieve and stored in a well closed container for further use.

Pharmacognostic study: In the macroscopical studies the size shape, margin, apex, venation, colour, odour, taste and the texture of the leaves were observed (Wallis 1985). The ash values of leaves were performed by pharmacopoeial methods (Anonymous 1966). Extractive values starting from petroleum ether (60-80°),

benzene, chloroform, acetone and methanol were successively determined by using, soxhlet extraction apparatus. The alcohol (90%) and we resoluble extractive were determined after evaporation of the solvent under reduced pressure. The behavior of the powdered leaves with different chemical reagents were studied and the fluorescence characters were also observed under ultra violet light at 254 nm (Raghunathan and Mitra 1982).

Preliminary phytochemical studies of different extractives were performed by specific reagents (Trease and Evans 1985, Tyler et al., 1988) and tin layer chromatographic study of t petroleum ether (60-80°) extract was performed (Stah 1 1969) as a white crystalline steroidal compound has been isolated fromit.

RESULTS AND DISCUSSION

A twig showing macroscopical characters of leaves of *Ficus racemosa* Linn. Has been sown in fig 1 the macroscopic characters of the leaves has been sown in Table 1. The physical constant values like total ash, acid insoluble ash, alcohol (90%) and water soluble extractive are reported in Table 2. Te water soluble extractive is more as compared to alcohol (90%) soluble extractive. The extractive values obtained after successive extractive extraction has been reported in Table 3. The chloroform extract sown minimum extractive value.

The results of preliminary phytochemical tests for the presence of active metabolites has been reported in Table 4. The presence of steroid, saponin, tannin, flavonoid and reducing sugar has been confirmed in the extractives of the leaves of *Ficus racemosa*.

Thin – layer chromatographic study on the petroleum ether extract sowed the presence of steroids (Table 5). White crystalline storidal compound has been isolated from it and characterization of the same is under process in our laboratory. The behavior of the powdered leaves on treatment with different chemical reagent and the fluorescence characters of the same ultra violet light has been shown in table 6 and table 7 respectively.

All these facts conclusively proves the presence of steroidal compound in petroleum ether extract and fixes some parameter for pharmacognostical identification of the leaves for further studies.

ACKNOWLEDGEMENT

The authors wish to thank west Bengal state Government for financial help to subhash C. Mandal for this work (Ref. No P-1/RS/165/95) and authority of Jadavpur University for providing all facilities. The authors also thank to Mr. K.C. Malick (Dy. Director) central national Herbarium, Botanical Survey of India, Shibpur, Howrah, for identification of the plant specimen.

Table 1: Macroscopic character of *Ficus racemosa* Linn. Leaves.

	Description
Size	Lamina: Length 7-17cm, Breadth 3-7 cm, Petiole: 3.2-8 cm
Shape	Ovate, Ovate- Lanceolate
Margin	Entire

Apex	Acute
Venation	Reticulate
Colour	Green (fresh), greenish brown (dried)
Odour	Not significant
Taste	Slightly acrid
Texture	Smooth, papery, glaucouse

Table 2: Physical constant values of *Ficus racemosa* Linn. Leaves

	Percentage*
Total ash	11.863
Acid insoluble ash	1.508
Alcohol (90%) soluble extractive	16.572
Water Soluble extractive	19.107

* Each value is an average of three determinations.

Table 3: Extractive values of the *Ficus racemosa* Linn. Leaves

Solvent	Percentage of extractive Values*	Colour of extractive
Petroleum ether (60-80o)	6.433	Greenish
Benzene	1.091	Green
Chloroform	1.776	Brownish
Acetone	8.451	Brown
Methanol	12.925	Brown

* Each value is an average of three determinations.

Table 4: Preliminary phytochemical tests for the presence of active metabolites in the ficus recemosa leen leaves. All extractive were negative for alkaloid and anthraquinone.

Extractive	Reducing sugar	Flavonoid	Tannin	Steroid	Saponin
Petroleum ether (60-80o)	-	-	-	+	-
Benzene	-	-	-	+	-
Chloroform	-	-	-	+	-
Acetone	+	+	+	+	+

Methanol	+	+	+	-	+
Alcohol	+	+	+	-	+
Water	+	+	+	-	+

+ = Present, - = Absent

Table 5: Thin –layer chromatographic characterization of petroleum ether (60-800) extract of ficus racemosa leaves *

Solvent system	No of spots	Rf values	Colour in naked eyes	Colour under UV light	Colour after spray and heat
Hexane: ethy acetate (1:1)	1	10.58	Yellowish	Pink	Violet ^a
	2	0.73	Yellow	Pink	Violet ^a
	3	0.86	Light green	Pink	Violet ^a
	4	0.93	Yellow	Pink	Violet ^a
Toluene: ethy 1 Acetate (9:1)	1	0.12	Yellow	Pink	Blue ^b
	2	0.19	Yellow	Pink	Blue ^b
	3	0.47	Greenish	Pink	Blue ^b
	4	0.58	Greenish	Pink	Blue ^b
	5	0.91	Yellow	Pink	Blue ^b
Chloroform: Acetone (19:1)	1	0.37	Yellow	Pink	Vilot ^c
	2	0.48	Yellow	Pink	Vilot ^c
	3	0.73	Greenish	Pink	Vilot ^c
	4	0.79	Greenish	Pink	Vilot ^c
	5	0.87	Yellow	Pink	Vilot ^c

* Stationary phase – Silic gel G; room temperature 310c

a= Colour after spraying with vanillin – phosphoric acid

b= Colour after spraying with Phosphomolybdic acid

c= Colour after spraying with Libermann-burcard reagent

Table 6: Behavior of the powdered leaves of *Ficus racemosa* Linn. On treatment with different chemical reagent

Reagent	Behaviour of powder
Picric acid (saturated aqueous solution)	Yellowish
Nitric cid (specific gravity 1.42)	Brick red
Hydrochloric acid (specific gravity 1.16)	Brownish
Sulphuric acid (80%)	Greenish
Glacial acetic acid	Yellowish

Sodium hydroxide (5N aqueous solution)	Yellowish
Iodine (aqueous solution)	Greyish
Ferric chloride(5% aqueous solution)	Bluish black
Antimony trichloride	Brownish
Powder ads such	Greyish green

Table 7: Fluorescence characters of the powdered leaves of *Ficus racemosa* Linn under ultra violet light.

Treatment	Fluorescence
Powder mounted with nitrocellulose	Bluish
Powder treated with sodium hydroxide in methanol	Greenish
Powder treated with sodium hydroxide in methanol – dried and mounted with nitrocellulose	Greyish
Powder treated with hydrochloric acid	Reddish
Powder treated with hydrochloric acid - dried and mounted with nitrocellulose	Greyish
Powder treated with sodium hydroxide in water	Blackish
Powder treated with sodium hydroxide in water- dried and mounted with nitrocellulose	Blackish
Powder treated with nitric acid diluted with equal volume of water	Bluish
Powder treated with sulphuric acid diluted with equal volume of water	Brownish
Powder treated with antimony trichloride	Bluish
Powder as such	Greyish

REFERENCE:

Anonymous, pharmacopoeia of India, manager of publication, ministry of health, Government of India, Delhi, 2nd ed. 947 – 948 (1966)

Anonymous, the wealth of India , raw material s, council of scientific and industrial research, New Delhi, vol IV 35- 36 (1952)

Chopra R.N., chopra I.C., Handa K.L. and kapur, L.D Indigenous drugs of India, academic publisher, Calcutta, 2nd ed., 508, 674 (1958).

Kirtikar, K.R. and Basu B.D. Indian medicinal plants, Bishen singh mahendra Pal singh dehra dun, 2nd ed vol III 2327, 2329 (1975).

Nadkarni, K.M. Nadkarni, A.K and chopra. R.N. Indian material medica pollular prakashan Bombay, Vol I, 548 – 550 (1976).

Raghunathan, K and mitra R., Pharmacognosy of indigenous drugs, central council for research in Ayurveda and siddha, New Delhi Vol II 752-754 (1982).

Stahl, E. Thin-layer chromatography springer-vierlag, New York, 329 – 334 (1969).

Trease, GE. And evans, W.C., Phar-macognosy, ELBS Publication, 12th ED., 344, 539-540 (1985)

Tyler, V.E., Brady, L.R. and Robbers J.E., Pharmacognosy, Lea & febiger publication, Philadelphia, 9th ed. 77-78 (1988).

Wallis, T.E. Textbook of pharmacognosy, CBS Publication 5th Ed., Delhi, 104 -105 (1985)
Table 1.