

P A R T - II

CHAPTER - I

Section - A

Morphological features of the plants of Flacourtiaceae family.

Flacourtiaceae is a family of seventy Genera and more than five hundred species, which are chiefly found in tropical and sub-tropical regions.

Members of this family are usually shrubs or trees¹⁸⁶.

Leaves are simple, alternate, stipules often soon falling off.

Flowers are hermaphrodite or unisexual, often dioecious or polygamous and variously arranged. Sepals are sometimes not distinguishable from the petals, imbricate or open in bud. Petals sometimes are not arranged regularly in relation to the sepals - large, small or absent, with or without an opposite scale inside the base imbricate. Stamens numerous, rarely few hypogynous, free; anthers 2 celled, often short, opening lengthwise by slits. Ovary 1 celled with one or more parietal placentals or rarely the placentals meeting in the middle; ovules two or more on each placenta; styles or stigmas as many as the placentas.

186. "Indian Medicinal Plants", K.R. Kirtikar and B.D.

Basu, Volm. I, page 218 (1975)

Fruit indehiscent, mostly a berry or drupe, very rarely a capsule, sometimes large. Seeds with fleshy endosperm and medium sized embryos; cotyledons often broad.

Flacourtiaceae Jangomas (Lour) Raeusch (also known as F. Cataphracta Roxb).

A small tree¹⁸⁷; spines compound. Branches white-dotted glabrous young armed; leaves oblong or oblong lanceolate long acuminate quite glabrous crenate-serrate; 2-4 by 1 - 1 $\frac{3}{4}$ inches, membranous, lower on the branches often obtuse. Ovary flask-shaped, neck contracted. Flowers very small, $\frac{1}{10}$ - $\frac{1}{8}$ inch diameter. Fruit the size of a small plum, purple, very acid. Plant is called Paniyala in Bengali; Talispatri in Hindi and Marathi.

Casaria Kurzii

Branchlets¹⁸⁸ minutely pubescent. Leaves 5 by 2 inch; petiole nearly $\frac{1}{2}$ inch. Pedicels not very many together, $\frac{1}{4}$ - $\frac{1}{2}$ in Calyx minutely pubescent. Fruit not ripe but can not become very large. The pedicels are much longer in this species than in any of the others; and the pubescence of the leaves beneath differs from all.

187. "The Flora of British India", J.D. Hooker, L. Reeve & Co., Ltd., Volm. 1, page 193 (1875)

188. "The Flora of British India", J.D. Hooker, Volm. 2, Page 595 (1875).

Casaria Graveolens Dalz

A shrub or tree 20 ft; branchlets glabrous to the final stipules ¹⁸⁹. Leaves 4 by 2½ in., broadly elliptic, little acuminate, rounded at the base; petiole ¼ in., but the leaves are often narrower, almost lanceolate, and acute at the base. Pedicels usually short, sometimes ¼ in., jointed at or above the base, aureopubescent below the articulation glabrous above to near the base of the calyx. Calyx always pubescent at the base, above sometimes densely aureo-pubescent, sometimes glabrous.

It is called chilli in Hindi and Bar Kaunle in Nepali¹⁹⁰.

189. "The Flora of British India", J.D. Hooker, L. Reeve & Co., Ltd., Volm. 2, page 592 (1875).

190. "The Trees of Northern Bengal", Govt. of Bengal Publication, A.M. Cowan and J.M. Cowan, page 16 (1929).

Section - B

Review of the plants investigated.

The Flacourtiaceae is well known for its characteristic medicinal oils obtained from their seed kernals. Some of the plants are reported to have medicinal applications in liver diseases, diarrhoea, enlarged spleen and to relieve nausea. A short review of the plants of this family with particular reference to triterpenoids isolated out of them which have been investigated by different workers are given in the following.

Hydrocarous Kurzii king Warb (formerly called Taraktozenous Kurzii King).

Oils obtained from their seed Kernals, Chaulmoogra oil¹⁹¹ has been used for a very long time for the treatment of skin diseases and especially for leprosy¹⁹² and as an ointment for tuberculosis¹⁹³ patients. Although many other fatty acids, monosaccharides and glycerides have been

191. F.B. Power, Am. J. Pharm., 8E, 493 (1915)

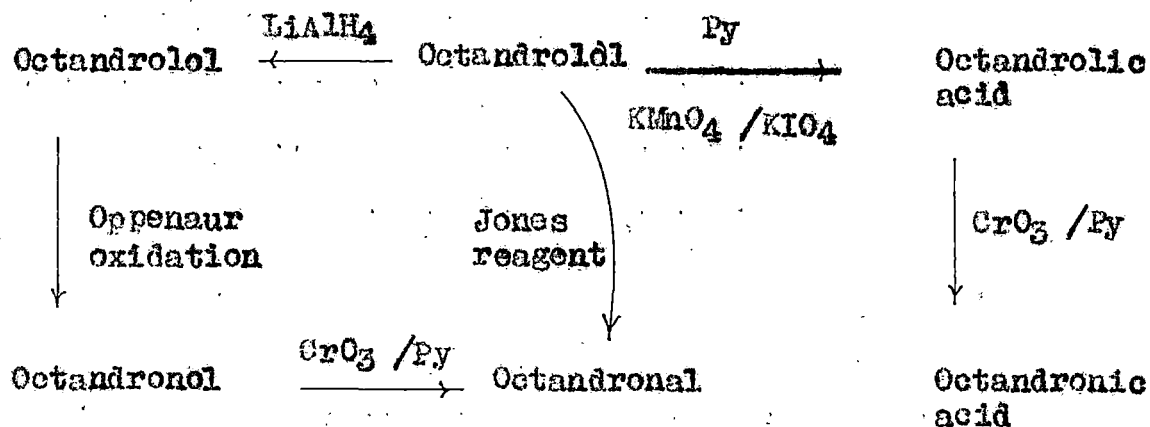
192. P.C. Kianz, China Med., 37, 142 (1923)

193. T.R. Govindachari, S.J. Jadhvir, B.S. Joshi, V.N. Kamat, P.A. Mohammed, P.L. Patenkar, D. Prakash, D.F. Rane and N. Viswanath, Ind. J. Chem., 308 (1969)

reported from seed extracts and bark extracts of the plant, no triterpenoid has been reported.

Hydnocarpus Octandra

Mangostin¹⁹⁴ has been isolated from the bark of the plant. Six new triterpenoids, namely, octandrolol, octandrolol, octandrollic acid, octandronal, octandronol and octandronic acid have also been reported¹⁹⁵ from the bark of the plant. All the compounds belong to friedelane skeleton. The isolation of these six related friedelane type compounds from a single plant is unique for triterpenoids.



194. S.P. Gunasekera, M.U.S. Sultanbawa and S. Balasubramaniam, Phytochemistry, **12(1)**, 232 (1973)

195. S.P. Gunasekera and M.U.S. Sultanbawa, Chemistry and Industry, 790 (1973).

Hydnocarpus Venenata Gaertn

Therapeutically effective oils have been obtained from *Hydnocarpus Venenata*¹⁹⁶. The bark of the plant has been found also to contain small amounts ($\approx 0.004\%$) of acetyl betulinic acid, acetyl ursolic acid, betulinic acid, ursolic acid sitosterol¹⁹⁷.

Hydnocarpus Anthelminthicus Pierre.

Therapeutically effective oils have also been obtained from seeds of *Hydnocarpus Anthelminthicus Pierre*¹⁹⁸. The seeds have also been found to contain monosaccharides and glycosides¹⁹⁹.

Trichadenia Zeylanica Thw

From the bark and wood extracts of *Trichadenia zeylanica* Thw, six new triterpenoids have been reported²⁰⁰ by Sultanbawa and co-workers. The triterpenoids are trichadenic acid A (3α -hydroxy friedelan-26-oic acid), O-acetyl

196. S.Ghosh, Ind. J. Med. Res., 6, 211 (1920)

197. S.P. Gunasekera, M.U.S. Sultanbawa and S.Belasubramaniam, Phytochemistry, 12, 232 (1973)

198. L. Adrians, Inst. Roy. Colonial Belze. Soc., Sci Nat. ed. Med. 15, 87 (1965)

199. Y. Hajime and U. Ariyoshi, Nippon Daigaku Yakugaku Kenkyu Kokoku, 14, 27 (1974)

200. S.P. Gunasekara and M.U.S. Sultanbawa, JCS Perkin I, 483 (1977)

trichadenic acid A, O-acetyl trichadenic acid B (3 β -acetoxy-friedelan-26-oic acid), trichadenic acid (3-oxo friedelan-26-oic acid), trichadenal (3 β -hydroxy friedelan-26-al) and O-acetyl trichadenal.

The hot light petroleum extract on a column of silica gel gave O-acetyl trichadenal, β -sitosterol and O-acetyl trichadenic acid B.

Xylosma Velutina

Xylosma velutina afforded three products. Two were flavonoids, namely, velutin (3'7-dimethoxy-4', 5 dihydroxy flavone) and genkwanin (4', 5-dihydroxy-7-methoxy flavone) have been isolated and the third one was a new triterpene acid, velutinic acid of friedelane skeleton.

Casaria Thwaitesii

The timber and bark of the plant yielded β -amyrin and sitosterol²⁰¹.

Scolopia Schreberi

β -amyrin, epi-friedelinol, friedelin and sitosterol have been reported²⁰¹ to be present in the bark and timber of the plant.

201. S.P. Gunasekera, S. Balasubramaniam, and M.U.S.

Sultanbawa, Phytochemistry, 16(6), 788-9 (1977)