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Pharmacognostical Studies of *Cordia dichotoma* Forst Leaves

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ABSTRACT

Plants are of great importance to pharmaceutical industry, both as a source of drugs and as vast reservoir of chemical diversity for screening programmes aimed at new drug discovery. Among them, *Cordia dichotoma* Forst., a small to moderate size of plant of family *Boraginaceae*. They are commonly called versatile language in our India, like bhokar, lasura, gonad, Indian cherry. This plant parts are used as fruit, seeds, bark. They show antidiabetic, antiulcer, analgesic activity. Phytochemical screening shows the presence of coumarins, flavonoids, saponins, terpens and sterols. The present work attempts to summarize the leaf constant, microscopic and physical constants *etc.* of leaves *Cordia dichotoma* Forst.

INTRODUCTION

Cordia Dichotoma Forst. which has been used in Indian folk medicine. In Maharashtra, it grows in moist monsoon forest also. It does not grow gregariously but is found growing singly in moist shady ravines and valleys. It grows in the sub-Himalayan tract and outer ranges, ascending up to about 1500 m elevation. It is found in a variety of forests ranging from the dry deciduous forests of Rajasthan to the moist deciduous forests of Western Ghats and tidal forests in Myanmar. It thrives in humid places or along watercourses in wastelands and mixed open forests and has been reported to occur in Afghanistan, India, Pakistan, Sri Lanka, Thailand, and Malaysia. In areas with annual rainfall less than 500 mm, it thrives along streams or depressions where moisture is available. The leaves are simple, entire and slightly denate, elliptical lancelate to broad ovate with round and cordatte base. *C. dichotoma* is a tree of tropical and subtropical regions. Flowers are bisexual. Flowering takes place from March to May with the new leaves. Fruits are formed soon after flowering, develop quickly and ripen from June to August in west India and normally before May in south India. Seed dispersal is aided by birds and monkeys which feed on the ripe fruit. Flowers are bisexual. It is yellow or pinkish-yellow shining globose or ovoid drupe seated in a saucer like enlarged calyx. It turns black on ripening and the pulp gets viscid. They contain protein with high quantity and fatty oils which give potential benefit for protein deficiency disorder. The leaves contain fatty acid quercetin, flavonoids, β-sitosterol-3-glucoside (Patel A K *et. al.*, 2011). Fruit has been identified for arabinoglucan, D-glucose and L-arabinose. *Cordia Dichotoma Forst*. studied for hypoglycemic, analgesic wound healing activity (Gaurav S *et. al.*, 2010).

MATERIALS AND METHODS

Collection of Plant Material:

The leaves of *Cordia Dichotoma Forst*. Leaves have been collected from the local area of Toranmal Tal. Shahada (Maharashtra). The plant is authentified by Dr. Santosh Tayade, Dept. of Botany, Art's, Science and Commerce College, Lonkheda, Shahada, Dist- Nandurbar (MS). The voucher specimen has been preserved in the laboratory for future reference.

Pharmacognostic Investigation of Leaves:

Determination of Physical Constants (Indian Pharmacopoeia, 1996)

The physical constants like loss on drying, ash value (total ash, acid insoluble ash value) and extractive values (water soluble extractive and alcohol soluble extractive value) were determined. Table 1.

Determination of Leaf Constant (Kokate, 1994)

The leaf constant like Stomatal number, Stomatal Index, Vein-Islet number, Vein termination number, Palisade cells number were determined.

Determination of Microscopical Characters

Microscopic study of leaves was made on paraffin embedded specimen. The specimen was sectioned with the help of rotary microtome. The thickness of section was kept 10-12 µm. Dewaxing of the section can be done by customary procedure (Johanson, 1940). The section was then stained with toluidine blue (O'brien, 1964).

RESULTS AND DISCUSSION

Table 1 shows the physical constants (% w/w) were determined. The loss on drying was found to be 3.4 %, total ash was found to be 5.1 % and acid insoluble ash value was found to be 1.0 %. The different extractive values such as water soluble extractive and alcohol soluble extractive value was found to be 23.1 % and 10.2% respectively.

Table 1: Physicochemical characters of crude drug *Cordia Dichotoma Forst.*

Sr. No	Physicochemical Properties	Result (% w/w)
01	Total Ash	5.1
02	Acid-Insoluble Ash	1.0
03	Loss on Drying	3.4
04	Alcohol Soluble Extractive	10.2
05	Water Soluble Extractive	23.1

The Table 2 show the values of leaf constant such as Stomatal number, Stomatal index, Vein-Islet number, Vein termination number, Palisade cells number was found to be 4, 1.4 - 2.0 -

4.3, 18 - 23, 8 – 12 and 1: 4 respectively. Leaf constants are fixed for all plant species, but they may vary from species to species. Determination of leaf constants is also one of the methods of standardization. It is helpful in identification of correct plant variety and also useful in predicting adulteration.

Table 2: Determination of Leaf Constants of *Cordia Dichotoma Forst.*

Sr. No	**Ratio values**	**Constants**
01	Stomatal number	4
02	Stomatal Index	1.4 - 2.0 - 4.3
03	Vein-Islet number	18 - 23
04	Vein-Termination No	8 – 12
05	Palisade cells Ratio	1 : 4

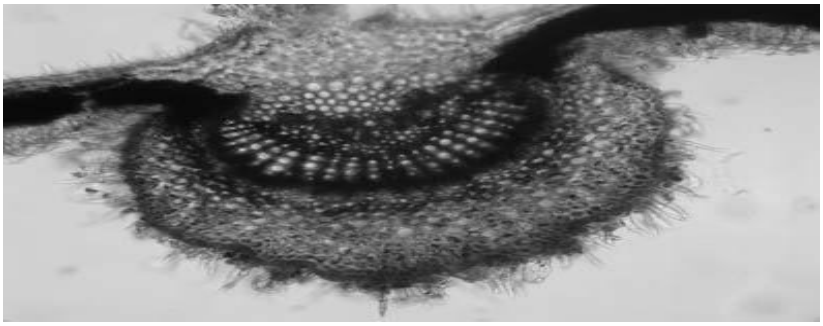

Fig. 1. Photograph showing transverse section of *Cordia Dichotoma Forst.* leaf.

Fine transverse section of the *Cordia Dichotoma Forst*. Leaf shows the presence of following parts - Epidermal and palisade cells, stomata, collenchyma and sclerenchyma cells, vascular bundle (xylem and phloem), trichomes and spongy parenchyma cells as shown in Fig. 1.

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