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Pharmacognostical Studies of *Vitex negundo* Leaves

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ABSTRACT : *Vitex negundo* of family Verbenaceae is an attractive evergreen tree of subtropical and warm region of India. The plant is known for its antibacterial, analgesic and anticonvulsant activities. The present work attempts to summarize the leaf constant, microscopic and physical constants etc. of leaves of Vitex negundo Linn.

Keywords : Vitex negundo, Verbenaceae, Antibacterial, Analgesic and Anticonvulsant.

INTRODUCTION

Vitex negundo Linn. (verbenaceae) is a woody, aromatic shrub growing to a small tree. It commonly bears tri- or penta-foliate leaves on quadrangular branches, which give rise to bluish-purple colored flowers in branched tomentose cymes. it thrives in humid places or along water courses in wastelands and mixed open forests and has been reported to occur in Afghanistan, India, Pakistan, Sri Lanka, Thailand, and Malaysia, (De Padua, 1999).

The leaves of vitex negundo Linn. contain hydroxy-3,6,7,3', 4'-pentamethoxyflavone 12, 6'-p-hydroxybenzoyl mussaenosidic acid; 2'-p-hydroxybenzoyl mussaenosidic acid Sehgal *et. al.*, 1982-83, 5, 3'-dihydroxy-7,8,4' trimethoxyflavanone; 5, 3'-dihydroxy-6, 7, 4'-trimethoxyflavanone (Achari *et. al.*, 1984), angusid; casticin; vitamin-C; nishindine; gluco-nonitol; p-hydroxybenzoic acid; sitosterol (Khare, 2004). It is widely used in the indigenous system of medicine for its many medicinal properties. VN has been extensively studied for its analgesic, anti-inflammatory (Telang *et. al.*, 1999 and Dharmasiri *et. al.*, 2003) and antioxidant (Tiwari and Tripathi, 2007).

MATERIALS AND METHODS

Collection of Plant Material

The leaves of Vitex negundo Linn. have been collected from the local area of Nandurbar (Maharashtra). The plant is authentify 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

A. Determination of Physical Constants (Indian Pharmacopoeia, 1996)

The physical constant 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.

B. 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.

C. 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

The Table 1 show the physical constants (% w/w) were determined. The loss on drying was found to be 3.1 %, total ash was found to be 5.20 % and acid insoluble ash value was found to be 1.06 %. The different extractive values such as water soluble extractive and alcohol soluble extractive value was found to be 11.5 % and 26.2 % respectively.

Table 1: Physicochemical Characters of Crude Drug *Vitex negundo* Linn.

S. No.	*Physicochemical Properties*	*Result (% w/w)*
1.	Total Ash	5.20
2.	Acid-insoluble ash	1.06
3.	Loss on drying	3.1
4.	Alcohol-soluble Extractive	11.5
5.	Water-soluble Extractive	26.2

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, 1.5 - 2.8 - 4.3, 19 - 24, 8 - 13 and 1 : 5 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 *Vitex negundo* leaf.

S No	*Ratio values*	*Constants*
1.	Stomatal number	4
2.	Stomatal Index	1.5-2.8-4.3
3.	Vein-Islet number	19-24
4.	Vein-Termination No	08-13
5.	Palisade cells Ratio	1:5

Fine transverse section of the *Vitex negundo* Linn. 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 Fig as shown in Fig. 1 and 2).

Fig. 1. Photograph showing transverse section of *Vitex negundo* linn leaf.

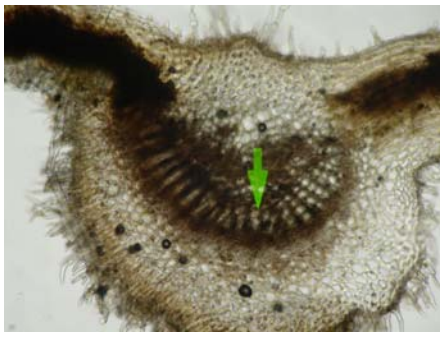

Fig. 2. Photograph showing lignified tissues (arrow) in transverse section of *Vitex negundo* linn leaf.

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