Original Research Paper

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PHARMACOGNOSTICAL & PHYTOCHEMICAL EVALUATION ON THE LEAVES OF *DUMASIA VILLOSA*

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ABSTRACT Pharmacognostical & Phytochemical evaluation helps in the standardization of drug which will further help in determining the therapeutic effect of the drug. Anatomical and powder microscopy of Dumasia villosa leaves are carried out to determine numerous factors like morphological characters, physiochemical parameters etc. Phytochemical studies shows the presence of alkaloids, saponins and flavanoids etc. The results obtained from this analysis can be utilized for setting monographs.

SUMMARY: In morphological studies it was observed that leaflets are single lobed, 7-5 cm long, acute apex, ovate in shape having seerate margin. Venation is parallel, petiole circular and it is having hairy surface with dark green in color. It showed the presence of covering uniseriate multicellular trichomes, vascular bundles, palisade cells and anomocytic stomata. In powder microscopy it was found that vessels are annular and thickened, trichomes, pollen grains, **calcium oxalate crystals and starch grains.**

KEYWORDS : *Dumasia villosa*, anatomical, standardization.

INTRODUCTION:

India has an ancient heritage of enormous varieties of flora. Materia medica gives valuable information on the folklore methods and there therapeutic effect. Indian system of medicines is based on system of medicines like Ayurveda, Homeopathy, Siddha, Unnani etc. The valuable constituents obtained after analysis of drugs obtained from natural sources leads to the discovery of new pharmaceutical products. In today's world herbal medicines are playing pivotal role due to lesser side effects and great Pharmacological action.

Materials And Methods

Collection And Authentication Of Plant Material

The plant of *Dumasia Villosa* was collected in February from Dehradun region (Uttarakhand) and authenticated by **Tariq Hussain**, Scientist-in-charge, Raw material Herbarium and Museum, NBRI Lucknow, and a voucher specimen was also deposited (specimen number:98213).

PROCESSING

Leaves were collected and made free from FOM, then washed in tap water, and then they are dried under shade, coarsely powdered and then kept in airtight container.

MACROSCOPY AND MICROSCOPY

Leaves of *Dumasia villosa* were subjected to microscopical study. Microscopy was done by using standard methods metioned in Wallis, 2002, Khandelwal 2005. In this Microscope used is simple and microtome was used for section cutting. Phloroglucinol and HCL are used as staining reagent in the ration 1:1 and then placed on a glass slide and kept under microscope. Characters which are identified for the fresh leaves are in Figure: 1 and listed in Table 1.

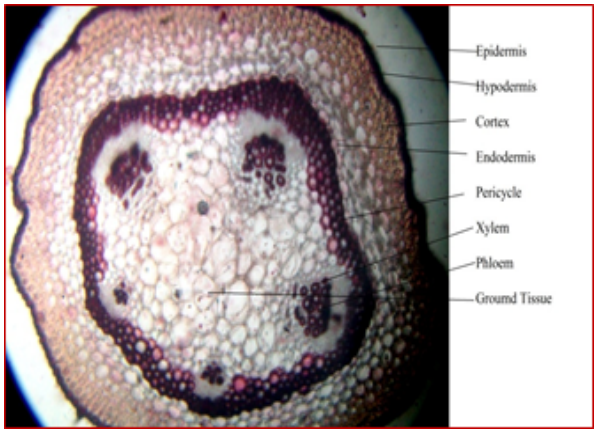

Figure 1: Transverse section of petiole of Dumasia Villosa

Table: 1: Leaf constant of leaves of *Dumasia villosa*

S. No.	Leaf constants	Values
1	Palisade ratio	5.5 - 6
2	Stomatal number	70 – 90
3	Stomatal index	11.50 – 15
4	Vein islet number	8 – 9/mm^2
5	Vein termination number	18 – 22/mm^2

POWDER MICROSCOPY

In this the drug is made free from FOM and then made into coarse powder with the help of grinder. Then the powder obtained is sieved through sieve no. 160 and 60. It showed the presence of calcium oxalate crystal, starch grains, trichomes, vessels etc.

PHYSIOCHEMICAL PARAMETERS

The leaves of *Dumasia villosa* are washed in water then converted into small pieces and air dried. Then oven dried at 40 ± 2^{0}C, after that grounded into coarse powder and used for the study of physicochemical parameters.

Loss on drying, ash value which includes total ash value, acid insoluble ash value, water soluble ash value, sulphated ash value, extractive value including petroleum soluble extractive value, ethyl acetate soluble extractive value, alcohol soluble extractive value, chloroform soluble extractive value, and water soluble extractive value of leaf are listed in table 2

Table: 2: Physicochemical Parameters of *Dumasia Villosa*

Parameters	Values (%w/w)
Alcohol soluble extractive	28.0
Water soluble extractive	18.40
Chloroform soluble extractive	8.50
Petroleum ether soluble extractive	6.01
Ethyl acetate soluble extractive	0.72
Moisture content (LOD)	10.50
Total ash	13.64
Acid insoluble ash	2.24
Water soluble ash	11.06

PRELIMINARY PHYTOCHEMICAL SCREENING

In this leaves are powdered and then extracted with alcohol, pet ether and water. Every extract was then subjected to various qualitative tests which leads to the determination of various phytoconstituents like alkaloid, saponin etc which are listed in table 3.

Table: 3: Preliminary Phytochemical Screening of Different Extracts of *Dumasia Villosa*

S.no	Tests	Pet. Ether	Ethyl acetate	Chloroform	Alcohol	Water
1	Alkaloids	_	_	+	+	_

2	Glycoside	_	+	_	+	_
3	Carbohydrates	+	_	+	+	_
4	Fixed oils and fats	+	+	_	+	_
5	Saponins	_	_	_	+	_
6	Phenolic comp. and tannins	_	+	_	_	_
7	Proteins and amino acids	_	_	+	+	_
8	Flavanoids	_	_	+	+	_
9	Steroid	_	_	+	+	_

(-) Not present, (+) present

DISCUSSION

According to the earlier review of literature *Dumasia villosa* is used in the treatment of various diseases without as such standardization. It is an integral part of establishing its correct identity before its inclusion in an herbal Pharmacopoeia. *Dumasia villosa* is a fern which has been confused with other species due to their relative similarities. Therefore the results obtained through this investigation can serve a proper base for identification, collection and investigation of the drug.

CONCLUSION

These parameters are evaluated first time therefore they can be utilized to prepare Herbal Pharmacopoiea Monograps.

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