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Research article

PHARMACOGNOSTIC AND PHYSICO- CHEMICAL EVALUATION OF LEAVES OF *TECOMA GAUDICHAUDI* DC (BIGNONIACEAE)Kedar K.A*¹, S.R.Chaudhari² and A. Srinivasa Rao³¹P. E. Society's Modern College of Pharmacy, Nigdi, pune-411044, Maharashtra.²Amrutvahini College of Pharmacy Amrutnagar, Sangamner SK, Tal-Sangamner, Dist Ahmednagar-422608.³Bhaskar Pharmacy College, Amdapur X Road, Moinabad, Ranga Reddy, Andhra PradeshE Mail ID: kk_pharma20@rediffmail.com

ABSTRACT: *Tecoma gaudichaudi* DC (Family Bignoniaceae) is a small tree of height 9-12m. and various *Tecoma* species are attractive to bees, butterflies or birds. Present study focuses on determination of some quantitative microscopical factors of leaves of *Tecoma gaudichaudi* DC includes Stomatal no., vein islet no etc. Under physico-chemical standards various parameters were checked, such as ash value, acid insoluble ash value and moisture content etc. It helps in to check purity of crude drug. Ultimately it helps in evaluation of crude drug and valuable addition of pharmacognostic data towards updating of monograph of plant species.

Key words: *Tecoma gaudichaudi* DC, Bignoniaceae, Stomatal no., Ash value.

INTRODUCTION

Bignoniaceae family having 100 genera and more than 800 plant species found in various tropical regions of India. (Kirtikar K.R, 1999). Bignoniaceae name came from genus Bignonia and known numbers of the family are *Tecoma*, *Catalpa*, *Tabebuia* and *Jacaranda*.

From literature survey extracts from many species of Bignoniaceae shows presence of promising active constituents such as tannins, flavanoids, alkaloids, carbohydrates etc. (Shuvasish Choudhury et al., 2011). Roots of plant from Bignoniaceae family known for its sedative, astringent, antidiarrhetic, diuretic and hydragogue activity. (Kirtikar K.R, 1999). *Tecoma gaudichaudi* DC belonging to family Bignoniaceae is a small tree. In Bangladesh whole plant of *Tecoma gaudichaudi* DC use as remedy in diabetes, in an infertility treatment, etc. (Mohammed Rahmatullah et al, 2010). Present work focus on various pharmacognostic and physicochemical parameters of plant.

MATERIALS AND METHODS

Collection of plant material: The leaves of *Tecoma gaudichaudi* DC (Family Bignoniaceae) were collected from in and around Pune district (Maharashtra) in the month of September 2011 and Authenticated by Botanical Survey of India, Pune.(Voucher specimen No.KALKTEG1)

Pharmacognostic study:

Quantitative microscopy helps in evaluation of different plant species under same family. Fresh leaves were collected, prepare surface preparation and observed it carefully under microscope and trace out by using Abbes Camera Lucida. Various parameters such as Stomatal no, Stomatal index, vein islet no& vein termination no. has been checked as per standard method (WHO, Quality control methods for medicinal plants, C.K. Kokate, 1994)

Preparation of plant material: Fresh plant material was collected, dry under shade, powder it and passed through sieve no 80. Fine powder use for physicochemical parameters.

Physicochemical Analysis of Plant material:**Extractive value of plant material**

This method determines the active constituents of plant material with different solvents and help in preliminary phytochemical tests of plant materials. (WHO, Quality control methods for medicinal plants, 1998)

Extractive values were carried out as per standard procedure. In this extractive value has been done by cold maceration methods

Cold Maceration: Weight out 4gm of coarsely powdered air dried material keep in glass-stopper conical flask. Macerate with 100ml of the solvents specified for the plant material concerned for 6hrs, shaking frequently then allowed standing for 18 hrs. Filter it, concentrate the solvent and calculate the content of extractable matter in mg per gm of air dried material. For Water soluble extractive value and alcohol soluble extractive value use the water and methanol as a solvent mention the finally yield of extractive value. (WHO, Quality control methods for medicinal plants, 1998).

Ash Value of plant material

Ash value is the very important parameters to check purity of crude drug, in powdered form. It includes determination of Total ash value, Acid insoluble ash value and water soluble ash value.

Determination of Total Ash

Weigh out 3gm of powdered drug in silica crucible. Incinerate the powdered drug in Muffle furnace, by gradually increasing the heat up to 450°C until it become free from carbon and cool. Weigh the ash and calculate the percentage with reference to the air dried crude drug material. (C.K. Kokate, 1994)

Determination of acid-insoluble Ash

Boil total ash obtained by above process with 25ml of dilute hydrochloric acid for 5 minutes. Filter by ashless filter paper, wash filter paper with hot water and ignite in crucible as per mention procedure. Weigh our with reference to air dried crude drug.

Determination of Water soluble Ash value: Water soluble ash value reflects water soluble content of ash of crude drug. (C.K. Kokate, 1994). This is determined in similar to acid insoluble ash, using 25ml of water, in place of hydrochloric acid. Method followed by as per (K.R.Khandelwal, 2010).

Moisture content of crude drug: Objective of moisture content is to check enzymatic activity or facilitate powders crude drug growth of microbes which responsible for degradation of phytoconstituents. (V.D. Rangari, 2006).

Determination of moisture content can be done by Loss on drying methods. Method includes weigh out 1.5gm of powdered drug place into weighed thin porcelain dish. After that keep in hot air oven at 105 °C, up to two repetitive weights do not differ by more than 0.5mg. Cool in desiccators and weigh. The loss in weight is usually considered as moisture level in powder drug. (C.K. Kokate, 1994).

RESULT AND DISCUSSION**Pharmacognostic study:**

Stomatal number is affected by various factors like age of plant, size of the leaf, environmental conditions etc. Stomatal index is not affected by such factors. So it is consider as standards for leaf identification. (K.R.Khandelwal, 2010). The Stomatal index and vein islet number mostly constants for plants. The results were depicted in (Table 1)

Extractive value: Alcohol and water soluble extractive values were determined from yield of extractive value we have general idea about amount of water and alcohol soluble constituents. Results are noted in (Table -2).

Ash Value of plant material: The main objective of ash value is to remove all traces of organic matter which mostly interfere in an analytical determination. By incinerating crude at 450°C, from this ash is formed it contains carbonates, phosphates & silicates of sodium, potassium, calcium & magnesium. In some drugs silica or calcium oxalates may be present in higher amount in that case acid-insoluble ash is calculated. Total ash, acid insoluble ash and Water soluble ash were determined. Observations are note in (Table 3).

Moisture content of crude drug: Moisture content mostly reflects storage condition of crude drug. It gives ideas about where drug should be deteriorated or not. (Table 3).

Table 1. Quantitative analysis of leaves of *Tecoma gaudichaudi* DC

S.No.	Parameters	Range
1.	Stomatal number	10-21 -
	Upper epidermis	
	Lower epidermis	
2	Stomatal Index	21-25 -
	Upper epidermis	
	Lower epidermis	
3	Vein islet number	9-12
4.	Vein termination Number	19-28

*Mean value of three counts

Table -2 Extractive values of leaves of *Tecoma gaudichaudi* DC

S. No.	Solvents	Average extractive value (% w/w)
1.	Ethanol (80%)	6.4%
2	Water	10%

Table 3- Physicochemical analysis of leaves of *Tecoma gaudichaudi* DC

S. No.	Physicochemical parameters	Percentage (% w/w)
1.	Total Ash value	4.33
2.	Acid-insoluble ash value	2.5
3.	Water soluble ash value	1.8
4.	Moisture content	3.3

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