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Pharmacognostic Studies on Acacia Arabica (Lamk.) Willd Analytical Studies

Khadse P. M.[1], Deshmukh V. R[2]
[1]Assistant Professor, Department of Botany, Shri R.L.T. College of Science, Akola, Maharashtra, India
[2]Associate professor, Department of Botany Vidyabharati Science college, Amravati, Maharashtra, India

ABSTRACT

Babool (Acacia arabica, Mimosaceae) is one such plant, having been prescribed for malaria, skin disease, cancer, anstringent, demulcent, aphrodisiac, anthlmintic, antimicrobial,antiodiarrhoel,colds ,bronchities and antidiabetic. This crude drug powder study was aimed to develop characteristics of powder crude methods in order to asses the quality of herbal drugs for therapeutic value. Sample subjected to various microscopical characteristics, physicochemical analysis and fluorescence test.

Keywords: Acacia arabica, physicochemical parameters, crude drug powder, Microscopy.

I. INTRODUCTION

Acacia Arabica (Lamk.) willd. (Mimosaceae), known in India as Babool, is widely distributed in Punjab, Rajasthan and northern part of the India. Herbal medicine has been enjoying renaissance among the customers throughout the world. However, one of the impediments in the acceptance of the ayurvedic medicines is the lack of standard quality control profiles. The quality of herbal medicine i.e. the profile of the constituents in the final product has implication in efficacy and safety. Due to the complex nature and inherent variability of the chemical constituents of plant-based drugs, it is difficult to establish quality control parameters. To overcome these problems modern analytical techniques are expected to help in circumventing this problem (Bagul et.al 2005). Between 1999-2001 the ayurvedic pharmacopeia of India was published in three volumes, which gave the botanical identity of plants, composition, analytical procedures etc. In spite the effort made for the standardization of ayurvedic medicine, major problems remain because the formulary lists only 635 whereas the herbal medicines in actual use are believed to be at least 1000 with many regional variations (Annonymus,1987). The absence post market surveillance and paucity of test laboratory facilities also make the qualities control of ayurvedic medicines exceedingly difficult at this time. Therefore an attempt has been made to analyse crude drug powder of Babool (Acacia arabica) used in has been reported to be a antidiabetic, skin disease, leucorrhoea, antidiarrhoeal, antidysentric, antihelmentic, piles, gonorrhea and as an antiasthmatic. (Rajvaidhya. S. 2015)

II. MATERIALS & METHODS

Plant Material: Acacia arabica (seed) was collected from the local region of Akola district (M.S.) and the plant material were authenticated by Dr. S. P. Rothe, Professor of Shri Shivaji College, Akola. Voucher specimen of the same have been deposited in the laboratory for future reference.

Preparation of powder: Crude drug has taken and roasted in a stainless steel pan at a low temperature till it becomes free from moisture. The sample Acacia arabica (seed) was powdered in a pulverizer and pass through sieve number 80#. It is packed in tightly closed containers to protect from light and moisture.

Organoleptic Evaluation: Organoleptic evaluation (Table1) refers to evaluation of formulation by colour, odour, taste, texture etc. Organoleptic characters of the

samples were carried out based on the method as described by siddiqui et al. (1995)

Physicochemical Parameters: Physicochemical investigations of the drug were carried out and they include determination of moisture, extractive values and ash values.(Asokar et.al 1992).

Determination of foreign matter: Drugs should be free from moulds, insects, animal faecal matter and other contamination such as soil, stones and extraneous material. 100g of the drug sample to be examined was weighed and spread out in a thin layer. The foreign matter (Table1) was detected by visual inspection, separated, weighed and the percentage present calculated (Pattnayak et.al 2010)

Determination loss on drying: It is important that the portion taken was large enough to be a representative for the sample. About 10g of accurately weighed drug was dried at 105°C for 5hours, and then weighed again. Percentage was calculated with reference to initial weight (Table 1).

Determination of total ash: The determination of total ash (Table1) is a method to measure the amount of the inorganic residual substance when the drug sample is ignited (Mukherjee, 2002). Total ash determination constitutes detecting the physiological ash (ash derived from plant tissue) and nonphysiological ash (ash from extrageneous matter, especially sand and soil adhering to the surface of the drug).For its detection, 2g of powdered material was placed in a suitable tared crucible of silica previously ignited and weighed. The powdered drug was spread into an even layer and weighed accurately. The material was incinerated by gradually increasing the heat, not exceeding 450°C until free from carbon, cooled in a desiccator, weighed and percentage ash was calculated by taking in account the difference of empty weight of crucible & that of crucible with total ash.

Determination of acid insoluble ash: The ash obtained as above was boiled for 5min with 25ml of dilute hydrochloric acid; the insoluble matter was collected on an ashless filter paper, washed with hot water and ignited to constant weight. The percentage of acid-insoluble ash (Table1) with reference to the air-dried drug was calculated.

III. DETERMINATION OF SOLVENT EXTRACTIVE VALUES

Alcohol soluble extractive: 5g of coarsely powdered air-dried drug was macerated with 100ml of alcohol in a closed flask for twenty-four hours, shaking frequently during six hours and allowing to stand for eighteen hours. It was then filtered rapidly; taking precautions against loss of solvent.25ml of the filtrate was evaporated to dryness in a tared flat-bottomed shallow dish at 105°C to constant weight and weighed. The percentage of alcohol-soluble extractive (Table1) was calculated with reference to the air-dried drug & is represented as %. (Mukherjee, 2002)

Water soluble extractive: 5g of coarsely powdered air-dried drug was macerated with 100ml of chloroform water in a closed flask for twenty-four hours, shaking frequently during six hours and allowing to stand for eighteen hours. It was then filtered rapidly, taking precautions against loss of solvent. 25ml of the filtrate was evaporated to dryness in a tared flat bottomed shallow dish at 105°C to constant weight and weighed. The percentage of water-soluble extractive (Table 1) was calculated with reference to the air-dried drug & is represented as %.

IV. RESULT & DISCUSSION

In the present study, physicochemical studies were performed. The Acacia arabica (seed) studies for the presence of foreign matter is mentioned in table 1.

The percentage of moisture content in Acacia Arabica (Lamk.) willd. was 5.83%, total ash 11.45%, acid insoluble ash 3.5%, water soluble ash 4.36%, alcohol soluble extractive 21.0%, and water soluble extractive 27.9%. However on the basis of polarity of solvents, the percentage of successive solvent extractive valued of extracts were in petroleum ether (2.3%), benzene (1.5%), chloroform (14.3%), acetone (19.3%), ethanol (18.0%), and water (23.13%) represented in (Table 1).

The foreign matter was removed and the powder was prepared. A part of the pure powder was kept aside to study the various parameters. Quality test for Crude Drug Powder was performed for moisture content, ash content, water soluble extractive, methanol soluble extractive, acid insoluble ash and water insoluble ash were found to be standard range.

V. REFERENCES

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Table 1. Analytical values of Acacia arabica (Lamk.) willd.

Sr. No.	Parameter studies	Value (% w/w)
1.	Total Ash value	11.45
2.	Acid Insoluble Ash	3.5
3.	Water Soluble Ash	4.36
4.	Loss on drying (moisture content)	5.83
5.	Solubility percentage in ▪ Alcohol ▪ Water	 21.0 27.9
6.	Extractive values in ▪ Petroleum ether ▪ Benzene ▪ Chloroform ▪ Acetone ▪ Ethanol ▪ Water	 2.3 1.5 14.3 19.3 18.0 23.13