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PHARMACOGNOSTICAL STUDIES ON THE LEAVES OF *Cassia tora* Linn. (FAM. CAESALPINIACEAE)

Avijit Mazumder, Vijay Lahkar, J. Sahay, A. Oraon, R. Mazumder, A. K. Pattnaik
Department of Pharmaceutical Sciences, Birla Institute of Technology, Mesra, Ranchi, Jharkhand – 835 215

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ABSTRACT

The leaves and seeds of Cassia tora (Family Caesalpinaceae) are used in the treatment of leprosy, ring worm, flatulence, colic, dyspepsia, constipation, cough, bronchitis and cardiac disorders in the Ayurvedic systems of medicine. The present study deals with the study of macroscopic characters of the leaves, ash values, extractive values, behavior on treatment with different chemical reagents and fluorescence characters under ultraviolet light. Preliminary phytochemical studies on different extractives of the leaves were also performed. These studies will help in the identification of the plant for further research.

INTRODUCTION

Cassia tora Linn. (Family : Caesalpiniaceae) is an annual herb, 30-39 cm high growing in India as wasteland rainy season weed. The leaves and seeds of *Cassia tora* are found to be used in leprosy, ring worm, flatulence, colic, dyspepsia, constipation, cough, bronchitis and cardiac disorders in the Ayurvedic system of medicine.

The leaves of *Cassia tora* are also used as antifungal agent due to presence of chrysophanic acid –9-anthrone[1]. Seed extract is also found to have hypotensive effect *in vitro* due to presence of anthraquinone aglycones and naphthopyrone glycosides [2,3] . Seed extract is also found to have antibacterial effect due to its phenolic constituents[4]. Considering its various therapeutic uses in traditional practice in India, it was found necessary to fix some pharmacognostical parameters to aid further identification of the plant material present study was undertaken on the leaves as a whole and its powdered form and is reported hereunder.

MATERIALS AND METHODS

Plant Material

The fresh plant of *Cassia tora* was collected from Ranchi (Jharkhand) during the month of August-September, 2003 and identified by the taxonomist of Department of Pharmaceutical Sciences, BIT, Mesra, Ranchi. The plant was later authenticated by the Central National Herbarium, Botanical Survey of India, Shibpur, Howrah (Ref. No. CNH/I-I(62)/2003-Tech II/3423) and a herbarium is preserved in our laboratory for future reference. The whole plant was properly cleaned and shade dried. It was grinded to powder form, passed

through 40 mesh sieve and was stored in a vacuum desicator for further studies.

Reagent

All the reagents were of analytical grade and obtained from S.D. Fine Chemicals Ltd., Mumbai.

Pharmacognostical study

In the macroscopic studies, the size, shape, color, odor, taste and the texture of the leaves were observed [5]. The ash values of leaves were performed by Pharmacopoeial methods. The extractive values with different solvents like methanol, petroleum ether (60-80°), benzene, chloroform and water were determined [6].Preliminary phytochemical studies of different extractives as performed which consisted of [7,8]. The behavior of the powdered leaves with different chemical reagents and the florescence character was also observed under ultra violet light at 254nm [9].

RESULTS AND DISCUSSIONS

The macroscopic characters of the leaves have been shown in Table 1. The physical constant values like ash value, acid insoluble ash, and water-soluble ash are reported in Table No. 2.The extractive values obtained after successive extraction has been reported in Table 3. The methanolic extract showed the maximum extractive value. These extracts were screened for presence of various phytochemical constituents and the result for the presence of active metabolites has been reported in Table 4. The presence of alkaloids and tannins has been confirmed in the methanolic extract whereas steroid is found to be present in the petroleum ether and chloroform extract. The behavior of the powdered leaves on treatment with different chemical reagents and the fluorescence character of the same under ultraviolet light have been shown in Table 5 and Table 6 respectively.

All these facts fix some parameters for pharmacognostical identification of the leaves for further studies.

Table-1:Macroscopic characters of leaves of *Cassia tora*

Color	Dark Green
Shape	Pinnate
Size	6-10 cm (length
Odor	Odorless
Texture	Smooth
Taste	Slightly Bitter

Table – 2: Physical constants of leaves of Cassia tora

Sl. No.	Constants	Yield% (w/w)
1	Total Ash	25.0
2	Acid Insoluble Ash	10.0
3	Water Soluble Ash	21.0

Table-3: Extractive value of Cassia *tora* Linn. Leaves

Solvent	Color of Extract	Percentage of Extractive values
Petroleum Ether	Greenish Black	11.31
Benzene	Yellowish Green	1.05
Chloroform	Greenish Black	1.75
Methanol	Greenish Brown	22.2
Water	Dirty Green	5.7

Table-4: Phytochemical tests for various extracts of Cassia tora leaves

Extract	Alkaloid	Trannin	Saponin	Steroid	Glycoside	Reducing Sugar
Petroleum Ether	-	-	-	+	-	-
Benzene	-	-	-	-	-	-
Chloroform	-	-	-	+	-	-
Methanol	+	+	-	-	-	-
Water	-	-	-	-	-	-

+ = Present ; - = Absent

Table- 5 : Behavioral pattern of powdered sample with different reagents

Chemical Reagent	Color of Powder
Powder as such	Dark Green
Picric acid	No change
Nitric acid (conc.)	Reddish Browm
Hydrochloric acid (conc.)	Greenish Black
Sulphuric acid	Greenish Black
Acetic acid (glacial)	Yellowish Brown
Iodine	Brown
Ferric chloride	No change
Sodium hydroxide	Greenish Black
Nitric acid (dilute)	Light Brown
Hydrochloric acid (dilute)	Dark Green

Table No- 6: Fluorescence analysis of powdered drug

Treatment	Color Development		
	Ultra Short	Ultra Long	Visible
Powder as such	Dark Green	Dark Green	Dark Green
Powder treated with dilute nitric acid	Black	Black	Reddish Brown
Powder treated with Sodium hydroxide in	Dark Green	Black	Dark Green

methanol			
Powder treated with Sodium hydroxide in water	Black	Black	Dark Green
Powder treated with hydrochloric acid	Black	Black	Dark Green
Powder treated with nitric acid in water	Black	Greenish Black	Reddish Brown
Powder treated with dilute sulfuric acid	Black	Black	Dark Green

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