Preliminary phytochemical study and medicinal aspects of *Cassia tora L.* (Ceasalpinaceae)

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Abstract

The current study is based on the phytochemical and medicinal aspects of *Cassia tora* L. a well known medical plant. Different plants parts of plant are taken under investigation for physical character studyt and qualitative and quantitative phytochemical estimation study. Presence or absence of a chemical i. e. qualitative analysis of drug will give the criteria to evaluate the drug or to standardize the drug. The present research work was confined to phytochemical study and medicinal value of *Cassia tora* L.

Keywords: Phytochemical, qualitative, quantitative, medicinal plant and *Cassia tora* L.

Introduction

Phytochemistry is the chemical analysis of plant products. The chemicals present in root, stem and leaf drugs are analyzed physically as well as chemically by qualitative and quantitative means various phytochemical techniques such as preliminary phytochemical investigation by secondary metabolites, proximate analysis, UV spectral analysis, FTIR analysis etc (M. B. Patil and P. A. Khan, 2017b and Tanveer *et. al.,* 2020).

The physical parameters like colour, odour and taste of powdered stem, root, leaf drugs serves as primary data for drug identification in medicinal plants investigation (M. B. Patil and P. A. Khan, 2017a). Estimation of qualitative as well as quantitative values of various chemicals taken together is assumed to produce specific data useful in standardizing a particular drug. The quantitative analysis of elements or chemicals are includes nitrogen, crude proteins crude fats, crude fibers, reducing sugars, non reducing sugars, total sugars etc. may fluctuate with the age of the plant, season of collection, hence these values are not considered as criteria (Maheshwari, 2000). Their values with little variation should be accepted as a base for standardizing a drug (Dr. M. B. Patil, and Dr. Amanulla Khan, 2020).

In most of region of Nandurbar district of Maharashtra state, *Cassia tora* L. is widely distributed on road and path side, which an important medicinal plants, belonging to the family Ceasalpinaceae (M. B. Patil and P. A. Khan, 2017a.).

Cassia tora L**.** leaves is used for curing fever, skin diseases and itch, antiperiodic, aperients, alterative and anthelmintic. Seeds are steeped in juice of *Euphorbia nerilifolia* L. and cow urine their paste is applied for cheloid tumors (Watt, 1895). The leaves rubbed are applied to parts stung by bees (Rheede, Ainslie, 1913). The leaves and Seeds contain chrysophanol acid–used for skin diseases like ringworm, scabies, eczema etc. (Dastur, 1962). Leaves and seeds for skin diseases (Kirtikar and Basu, 1980). Roots are used on abnormality of child birth, (Jain, 1981).The Leaf and seed for dyspepsia, intermittent fevers, opthalmopathy, cough, bronchitis, cardiac disorders and hemorrhoids (Varier's, 1994). Leaf and Seeds are given to the animals for inducing fat. (Maheshwari, 2000). The seeds are used for eye diseases liver complain in blood poisoning and Diphtheria. (Pagare, 2007). The parameters used are: Physical parameters i. e. colour, odour and taste, Chemical parameter that's includes Qualitative chemical parameters and Quantitative chemical parameters.

Cassia tora L. (Caesalpinaceae)

Materials and Methods

The samples were collected from the medium sized authentically identified plant species from different localities of Nandurbar district in Maharashtra and identification has been taken from local flora. The roots, stems and leaves were removed carefully by hand pricking without damaging the

plants. Collected plant parts dried in shade. After drying grinding the material and fine powder had been made. These powder have been using for chemical analysis. In Phytochemical studies, plants powders of *C. tora* were under taken for chemical analysis (M. B. Patil and P. A. Khan 2017a).

Result and Discussion

Family: Caesalpiniaceae

Local Name: Tarota, Dukkarsheng, Powadya

Morphology: Erect foetid herbs. Leaflets 3 pairs, obovate, oblong, glands between the leaflets. Flowers yellow, 1-2 in axillary pairs. Pods elongate, curves, sub tetragonal.

Flowers and fruits: August -December.

Distribution: Very common weed throughout the all district. In India it occurs as wasteland rainy season weed.

Medicinal Properties: Thermogenic, laxative, liver tonic, cardio tonic. Leaf infusion or extract is orally taken, to cure tuberculosis. Leaves are used as a alterative and anthelmintic. Root paste is externally applied as an antidote to snake bite and scorpion sting. Decoction of leaves and seeds is orally taken, to cure several skin diseases. Alcoholic extract of plant is used as an antibiotic to wash wounds and orally given to expel the ringworm. Tender leaves are eaten as a preventive, to skin diseases. Seed paste is used in skin diseases like ringworm, scabies and eczema1.The tender leaves are boiled and the extract is rubbed on Eczema. According to Ayurveda the leaves and seeds are acrid, laxative, antiperiodic, anthelmintic, ophthalmic, liver tonic, cardiotonic and expectorant. The leaves and seeds are useful in leprosy, ringworm, flatulence, colic, dyspepsia, constipation, cough, bronchitis, cardiac disorders (Igoli *et., al.,* 2005 and Lee *et., al.,* 1998).

Chemical Properties:

Roots: 1,3,5-trihydroxy-6-7-dimethoxy-2-methylanthroquinone and beta-sitosterol.

Seeds: Naptho-alpha-pyrone-toralactune, chrysophanol, physcion, emodin, rubrofusarin, cchrysophonic acid-9-anthrone.

Leaves: Emodin, tricontan-1-0l, stigmasterol, beta-sitosteral-beta-D-glucoside, freindlen, palmitic, stearic, succinic and d-tartaric acids uridine, quercitrin and isoquercitrin.

(+)- rhein, aloe-emodin, chrysophanol, 7% resins, cathatrine, calcium, iron, phosphorus, 1,3,5-trihydroxy-6-7-dimethoxy-2-methylanthroquinone, beta-sitosterol, naptho-alpha-pyrone-toralactune, chrysophanol, physcion, emodin, rubrofusarin, cchrysophonic acid-9-anthrone, tricontan-1-0l, stigmasterol, b-sitosteral-b-D-glucoside, freindlen, palmitic, stearic, succinic and d-tartaric acids uridine, quercitrin, isoquercitrin (Lee *et., al.,* 1998).

I. Physical parameters: -

Sr. No.	Physical parameters	Root	Stem	Leaves
1	**Colour**	Whitish Brown	Brown	Dark Green
2	**Odour**	Characteristic	Characteristic	Pungent
3	**Taste**	Tasteless	Slightly Sweet	Sweet

Table 1.0 Physical Parameter

II. Chemical parameter:

i) Qualitative chemical parameters: (Table 2) **A**lkaloids are present almost all the alkaloids have one or other Medicinal property and hence their presence in the Medicinal plants is not surprising. Phytochemical screening was carried out to assess the qualitative chemical composition of crude extract. The major natural chemical groups such as steroids, reducing sugar, alkaloids, phenolic compound, saponin, tannins, amino acid, etc. (Rajasekaran Narmadha and Kanakasabati Devala, 2012).

Sr. No.	Name of the Sample	Alkaloids	Anthraqinone	Iridoids	Saponins	Steroids	Tannins
1	Root	+	+	+	_	+	+ + +
2	Stem	+	+	+	+ + +	+	+ +
3	Leaves	+	-	-	_	+	+ + +

Table 2.0 Qualitative Chemical Parameter

ii) Quantitative chemical parameters: - Dry matter (DM), Bulk density, Total Ash (TA), Acid insoluble ash (AIA), Acid soluble ash (ASA), Water insoluble ash (WIA), Water soluble ash (WSA), Nitrogen (N), Water soluble nitrogen (WSN), Crude protein (CP), Reducing sugars, Non-reducing sugars, Total sugars, Crude fats (C fat), Crude fibers (CF), Cellulose, Gross energy (GE), Calcium (Ca), Phosphorus (P) and Extractive values in Water, Acetone, Butanol, Chloroform, Diethyl Ether, Ethyl alcohol, Methanol, Petroleum ether, Propanol.

Sr. No.	Plant Parts	D.M.%	B.D.in mg/cm^3	Total Ash	Acid insoluble ash	Acid soluble ash	Water insoluble ash	Water soluble ash	Nitrogen	Crude protein
1	*Root*	55.38	0.439	07.75	0.75	06.90	04.75	3.0	2.25	20.31

2	Stem	51.81	0.402	06.80	2.25	04.65	05.30	1.5	2.75	17.18
3	Leaves	34.44	0.335	07.35	0.45	06.20	06.15	1.2	3.23	13.50

Table 3.0 Quantitative Chemical Parameter

Conclusion

Physical parameters of C. tora has been studied separately for root stem and leaves, qualitative chemical properties of different plants parts studied with respted to steroids, reducing sugar, alkaloids, phenolic compound, saponin, tannins, amino acid. Quantitative chemical properties fpr phytochemical analysis viz. dry matter, nitrogen, water soluble nitrogen, crude protein, crude fat, crude fiber, total ash, acid insoluble ash, acid soluble ash, total sugar, etc has been recorded. Phytochemical and medicinal aspects for *C. tora* hence showing notable properties by all these parameters taken together are helpful in determining the authenticity of raw materials of plants as medicine.

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