

Physicochemical and Pharmacognostic Studies For Seeds of Psoralea Corylifolia and Cassia Tora

*Urmila.G.H

Department of Pharmacognosy, Nargund College of Pharmacy, Bengaluru, Karnataka, India.

Submitted: 05-05-2022

Accepted: 15-05-2022

ABSTRACT

Psoralea corylifolia, commonly known as babchi, is a popular herb, which has since long been used in traditional Ayurvedic and Chinese medicine for its magical effects to cure various skin diseases. Cassia tora Linn (Family: Leguminosae) is annual under shrub grows all over the tropical countries it is well recognized traditional medicine as laxative and is useful for treatment of leprosy, ringworm infection, ophthalmic, skin diseases and liver disorders. The present study deals with the evaluation of physico chemical and pharmacognostic parameters for seeds of Psoralea corylifolia and Cassia tora (Linn.). The observations of the current study can be useful for identification, standardization and authentication of plants.

KEYWORDS: Psoralea corylifolia, Cassia tora, traditional, physico chemical, pharmacognostic, skin disease.

I. INTRODUCTION

The World Health Organization (WHO) estimates that about 80% of people living in developing countries rely almost exclusively on traditional medicines for their primary health care needs. India is virtually a herbarium of the world. In India, we are using plants and herbs as the basic source of medicine.¹ Plants have been the basis of many traditional medicines throughout the world for thousands of years and continue to provide new remedies to mankind. Plants have been one of the important sources of medicines since the beginning of human civilization. The recent resurgence of plant remedies resulted from several factors, such as effectiveness of plant medicines and lesser side effects compared with modern medicines.²

Cassia tora Linn (Family: Leguminosae) is annual under shrub grows all over the tropical countries. It is also known as 'Chakramard' in Ayurveda.¹ Psoralea corylifolia Linn (Fabaceae), a medicinally important plant, indigenous to tropical and subtropical regions of the world, is reported in the Indian Pharmaceutical Codex, the Chinese,

British and American Pharmacopoeias and in different traditional systems of medicine, such as, Ayurveda, Unani and Siddha.³ Cassia tora is well recognized traditional medicine as laxative and is useful for treatment of leprosy, ringworm infection, ophthalmic, skin diseases and liver disorders. Several chemical compounds such as Anthraquinone glycosides, Naphthopyrone glycosides, Phenolic compounds, Flavonoids etc. have been isolated from this plant.¹

P. corylifolia Linn. commonly known as 'Bakuchi' is conventionally used in Ayurvedic system of medicine for the treatment of various pathological conditions but especially for treatment of skin disorders such as psoriasis, leucoderma and leprosy in the form of internal medications as well as external applications. P. corylifolia Linn. seed has been reported to contain several phytoconstituents including coumarins and flavone components.³

The present studies were carried out to determine the physico chemical and pharmacognostic parameters for the seeds of Psoralea corylifolia and Cassia tora (Linn.)

II. MATERIAL AND METHODS

Collection and Authentication: Seeds of Psoralea corylifolia and Cassia tora were collected from local market Bangalore, identified and authenticated at regional research institute Bangalore with reference number RRCBI-19040 and RRCBI-15812 respectively. Seeds were powdered and stored in air tight container for further use.

Herbarium preparation: Herbarium for both Psoralea corylifolia and Cassia tora seeds was prepared.

Microscopy analysis: Transverse section for Psoralea corylifolia and Cassia tora seeds were taken, stained and mounted.

Preparation of extract: Collected seeds were pulverized to a coarse powder and were being successively extracted with Petroleum ether, hexane, Methanol and chloroform water by

Soxhlet extraction method and obtained extracts were evaporated to dryness in rotary evaporator.

Preliminary phytochemical screening: The methanolic extract of *Psoralea corylifolia* and *Cassia tora* seeds were subjected to different chemical tests for the detection of phytochemical constituents such as carbohydrates, glycosides, alkaloids, amino acids, phenolics, flavonoids, triterpenoids, steroids, etc.⁴

Phytochemical screening: The seed powder of *Psoralea corylifolia* and *Cassia tora* was subjected to evaluate foreign organic matter, fluorescence analysis, total ash, water soluble ash, acid insoluble ash value, moisture content, swelling factor and foaming index.

Foreign organic matter: The seeds were spread and sort for any foreign matter by visual inspection using magnifying lens, portion of sorted foreign matter was weighed.⁵

Physicochemical parameter

Fluorescence analysis of powders: Dried powder of the seeds were tested for their characteristic colours fluoresced both under visible (short) and ultraviolet (long, UV 365nm) lights after treating with chemical solvents including alkalis and acids.⁶

Determination of ash value: The ash remaining after complete ignition of medicinal plant material is determined by three different methods- Total ash, Acid insoluble ash and water soluble ash.

Acid insoluble ash: It measures the amount of silica present especially as sand and siliceous earth. Water soluble ash is the difference in weight between the total ash and the residue after treatment of the total ash with water.

Total ash: Total ash was found by incinerating the known weight of the dried powdered at

Water soluble Ash Value: The total ash obtained after boiling with water, insoluble matter was collected on an ash less filter paper, washed with hot water and ignited. The percentage of water-soluble ash was calculated with reference to the air-dried drug.⁹ cooled and weighed and percentage of total ash was calculated.

Acid Insoluble Ash: The Total ash obtained after boiling 2N hydrochloric acid, insoluble matter was collected on an ash less filter paper, washed with hot water, dried the filter paper, ignited and weighed. The percentage of acid insoluble ash was calculated with reference to the air-dried drug.⁷

Determination of Moisture content by loss on Drying: Known weight of the powdered drug was dried in the oven at 100-105°C for 1 hour cooled and weighed, percentage of moisture content was calculated with reference to the air-dried drug.⁸

Determination of swelling index: The swelling index is the volume in ml taken up by swelling of 1g of seed and measuring the volume occupied.⁹

Determination of Foaming index: The foaming ability of aqueous decoction of seeds is measured in terms of foaming index.¹⁰

III. RESULTS AND DISCUSSION

Psoralea corylifolia seeds were found to be blackish brown in colour flattened and having a shiny appearance with a characteristic odour and bitter taste. Shape of seeds was found to be oblong having a length of 3 to 4 mm and 1-2mm width and a thickness of 1mm.

Cassia tora seeds were yellowish brown in colour with a round shape and shiny appearance, odour and taste was found to be characteristic, with a oblong round shape having a length of 3 to 4 mm and 1-2mm width and a thickness of around 2mm.

Transverse section of *Cassia tora* seed shows longitudinally elongated cells, palisade layer composed of parenchymatous cells, thick walled parenchymatous cells in the inner layer of testa having scattered vascular bundles. Epidermis showed single layer with cuticle covered. Seed showed the presence of calcium oxalate crystals, vascular bundles and starch grains. Transverse section of *P. corylifolia* Linn showed presence of outer layer covered with smooth cuticle, parenchyma cells, oil globules and endosperm showed the presence of crystalline material.

Physicochemical Evaluation: Results of physicochemical evaluation for the seeds of *Psoralea corylifolia* and *Cassia tora* have been tabulated in Table 1 and 2.

The fluorescence analysis of the powder of *Psoralea corylifolia* and *Cassia tora* in various solvents and chemical reagents under visible (short) and ultraviolet (long, UV 365nm) lights and normal day light is given in Table 3.

Table 1: Physiochemical evaluation

SI.no	Physical parameters	Psoraleacorylifolia	Cassia tora
1	Foreign organic matter	0.78%	0.65%
2	Total ash	7.2%	8.1%
3	Water soluble ash	3.5%	4.2%
4	Acid insoluble ash	3.22%	4.8%
5	Moisture content	5%	6.85%
6	Swelling index	24ml	26ml
7	Foaming Index	<100	<100

Table 2 : Fluorescent analysis of Psoraleacorylifolia

Reagents+Powder	Day light	Short wave length	Long wave length
Seed powder	Blackish brown	Blackish brown	Blackish brown
Powder + water	Blackish brown	Pale brown	Blackish brown green
Powder + Ethanol	Blackish orange	Dark brown	Greenish yellow
Powder +dil HCl	Blackish brown	Pale grey	Greenish brown
Powder+dil.H ₂ SO ₄	Dark reddish black	Brownish red	Dark black
Powder+dil. HNO ₃	Blackish brown	Yellowish brown	Brownish green
Powder +dil.NaOH	Yellowish brown	Reddish yellow	Greenish yellow
Powder alc.NaOH	Blackish orange	Reddish brown	Blackishyellow
Powder +aq.KOH	Reddish yellow	Brownish yellow	Blackishyellow
Powder+alc.KOH	Blackish orange	Pale brown	Blackish yellow

Table 3: Fluorescent analysis of Cassia tora

Reagents+Powder	Day light	Short wave length	Long wave length
Seed powder	Yellowish	Yellowish	Yellowish
Powder + water	Dark Yellowish	Yellow	Greenish Yellow
Powder + Ethanol	Light Yellowish	Yellowish brown	Greenish
Powder +dil HCl	Pale Yellowish brown	Yellowish brown	Light Greenish yellow
Powder+dil.H ₂ SO ₄	Dark red	Reddish Brown	Brownish Yellow
Powder+dil. HNO ₃	Brownish Yellow	Yellowish red	Yellowish brown
Powder +dil.NaOH	Reddish	Reddish orange	Brownish Yellow
Powder alc.NaOH	Light Brown	Blackish yellow	Brownish Yellow
Powder +aq.KOH	Reddish	Reddish orange	Yellowish
Powder+alc.KOH	Pale Yellowish brown	Brownish black	Brownish

IV. CONCLUSION

Physicochemical and Pharmacognostic Evaluation of seeds of *Psoraleacorylifolia* and *Cassia tora* can be useful in identification, standardization and authentication of raw material. The various parameter studied during the present

analysis will also be helpful in quality assessment and detection of adulterants in the herbal material.

V.ACKNOWLEDGEMENTS:

The authors, gratefully thank Rajiv Gandhi university of Health sciences, Bengaluru, Karnataka, for providing us the required financial support for carrying out this research project under RGUHS advanced research grants. We are also thankful to principal, Nargund college of Pharmacy, Bengaluru, for providing the necessary support and facilities.

Authors contribution :Dr.Urmila.G.H is the Principal investigator of the research project.

Authors Funding: Authors received funding from Rajiv Gandhi University of health sciences, Bengaluru, Karnataka, under advanced research Grants.

REFERENCES:

- [1]. Pawar and D'mello. Cassia toralinn.: An overview. International journal of pharmaceutical sciences and research . 2011; 2(9): 2286-2291 .
- [2]. Khushboo P. S. Jadhav V. M., Kadam V. J., Sathe N. S. Psoraleacorylifolia Linn.— “Kushtanashini” . PharmacognosyReviews . January-June 2010; 4(7):69-76.
- [3]. Sahara Shrestha a, Hasmukh R. Jadava ,PrashantBedarkar et al.A Journal of Ayurveda and Integrative Medicine 2018; 9:209-212.
- [4]. Prashanttiwari,Bimleshkumar,Mandeepkaur et al.Phytochemical screening and Extraction.Areview.InternationallePharmaceutica sciencia.2011;1(1):98-106.
- [5]. Quality control methods for medicinal plants material by WHO Guidelines :08
- [6]. Dibyajyothisaha,Swatipaul. Pharmacognostic studies of aerial part of methanolic extract of Tridaxprocumbens.Asian journal pharm tech.2012;2(2):107-109.
- [7]. Quality control methods for medicinal plants material by WHO Guidelines :28
- [8]. Quality control methods for medicinal plants material by WHO Guidelines :33
- [9]. Quality control methods for medicinal plants material by WHO Guidelines :45
- [10]. Quality control methods for medicinal plants material by WHO Guidelines :46