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Physicochemical Evaluation of *Aurucaria columnaris*

*Bhargava Manikanta P. Raghu Varma P.Vamsi Krishna A Ravi Kumar
Department of Pharmacognosy PG & Research Bapatla College of Pharmacy, Bapatla 522 101, Andhra Pradesh, India.
*** Corresponding Author: E-Mail:bhargavamanikanta999@gmail.com**

ABSTRACT

With increasing demand in the field of herbal medicines and cosmetics, it has become necessary and pertinent to probe into the area of systematic knowledge about herbal drugs. There is a need for the application of this knowledge in authentification, detailed study and practical utilization of crude drugs. The present paper deals with the taxonomy, anatomy, powder study pertaining to organoleptic, microscopic, fluorescence and physical constant evaluations of *Aurucaria columnaris*

Keywords: *Aurucaria columnaris*, Physicochemical, studies

INTRODUCTION

Pharmacognosy is the study of the structural, physical, chemical and sensory characters of crude drugs of animals, plants and mineral origin. The search for biologically active compounds from natural source has always been of great interest to researchers looking for new source of drugs useful in infectious diseases. Higher plants have played a vital role as the source of important therapeutic agents. Only a small percentage of higher plant species have so far been exploited and much remains to be done. *A. columnaris* belongs to the family Araucariaceae Literature survey of this plant indicates its high medicinal value.

MATERIALS AND METHODS

A. columnaris is a medicinal plant. Disease free plants were collected from vegetative parts of the plant was identified and authentified and preserved in crude drug museum, Department of Pharmacognosy Bapatla College of Pharmacy, Bapatla, Andhra Pradesh, India.

Preparation of plant material: Remove adhering dust and then dried under shade, finely powdered with the help of polarizer. This powder was used for further studies. Morphological characters of plants like color, surface texture, taste and odor were examined .Free hand sections were taken, cleared with chloral hydrate and treated with phloroglucinal and mounted in glycerin. Organoleptic evaluation, histochemical color reactions, fluorescence evaluations, behavior of the powder with different chemical reagents, Ash values, and preliminary phytochemical analysis were determined.

RESULTS AND DISCUSSION

Macroscopic characters: Herbs of strong- scented leaves alternate, entire and incised. Petiolated leaves and obscurely lobed hoary on both surface. Broadly hemispheric pedicellate second nodding distant in lax long racemes terminating the branches, outer involucres bracts green hoary, inner broadly scarious, receptacular hairs straight, outer flowers female, 1 seriate, fertile, inner flowers bisexual fertile or sterile, disk-flowers fertile, bracts glabrous. Anther bases obtuse, yellow tubular small flowers. Fruit are very small achenes.

The taxonomic features collected from the species have been confirmed with the flora of Andhra Pradesh and Authentified.

Microscopic characters:

Transverse Section of Stem: The *A. columnaris* stem shows circular shape with numerous epidermal hairs. Epidermis is single layered, with upper most cuticle and multicellular glandular epidermial hairs. Cortex consists of collenchymatous, chlorenchymatous and parenchymatous cells. Endodermis is single layered and parenchymatous with characteristic casparian thickening. Pericycle consists of sclerenchymatous and parenchymatous cells.Vascular bundle is separated by wide medulary rays. There are distinct cambial strips in between xylem and phloem.

Organoleptic evaluation: Colour, odour, taste, texture and special features are recorded. Histochemical colour reactions were noted and presented. Behavior of the powder with different chemical reagents is presented. Total ash values, NaOH insoluble ash, ethanol insoluble ash, acid insoluble ash (HCl), sulphated ash are presented.

Table.1. Organoleptic evaluation of *A. columnaris*

Particulars	Observations
Color of Powder	Pale green
Odor	Aromatic and pleasant
Taste	Bitter and astringent
Texture	Smooth
Special features	Snake shaped leaves which are pinnately compound

A. columnaris plant powder and the extracts of the powder on various solvents were examined under ordinary light and ultra- violet light (365 nm). This powder was also treated with various chemical reagents and the changes in colour were recorded. These results were presented.

Phytochemical screening: The phytochemical test was performed. Macroscopic and microscopic characters, fluorescence analysis, phytochemical characters can be used as a diagnostic tool in the correct identification of plants. The adulterants if any in the plant material can also easily identified by these studies.

Table.2.Ash values *of Aurocaria columnaris*

Parameters	Ash values
Total ash value	11.40
Sodium hydroxide insoluble	1.61
Ethanol (insoluble ash)	2.7
Acid insoluble ash (HC1)	3.41
Sulphated ash (H_2SO_4)	6.48

The values are average of three replicates. Values are expressed in percentage on dry weight basis.

Table.3a.Fluorescence and Behavior of the powder of *Aurucaria columnaris* with different chemical reagents

Test	**observations**	
Powder + picric acid	Yellow colour	Presence of alkaloids
Powder + Cone. Sulphuric acid	Reddish brown colour	Presence of steroids
Powder + aqueous ferric chloride	Green fluorescence	Presence of flavonoids
Powder + iodine solution	Blue colour	Presence of starch
Powder + ammonia solution	Pink colour	Presence of anthraquinone
Powder + aqueous silver nitrate	White precipitate	Presence of protein
Powder + aqueous potassium hydroxide	Yellow colour	Presence of flavonoids

Table.3b.Fluorescence and Behavior of the powder of *Aurucaria columnaris* with different chemical reagents

Test	**observations**	
	visible	UV (365nm)
Benzene	Pale green	Light pink
Petroleum Ether	Pale green	Reddish
Ethanol	Olive green	Colorless
Solvent Ether	Pale green	Light pink
Chloroform	Olive green	Rose
Acetone	Pale green	Reddish
Water	Dull green	Colorless
Methanol	Olive green	Pinkish
Hydrochloric acid	Pale green	Pinkish
Sulphuric acid	Light green	Pink
Sodium hydroxide	Olive green	Colorless
N- Propanol	Olive green	Reddish
Powder as such	Pale green	Whitish green

Table.4.Phytochemical screening of *A. columnaris*

Chemical	Observation	Chemical	Observation
Alkaloids	+++	Tannins and phenolic compounds	+++
Saponins	+++	Steroids and sterols	+++
Carbohydrates	+++	Fixed oils and fats	+++
Glycosides	+++	Triterpenoids	+++
Flavonoids	+++	Resins	+++
Gums and Mucilage	++	Santonica/Artemisinin	+++
Proteins and Amino acids	+++		

CONCLUSION

Microbes of increasing resistance towards these drugs so require a new agent have antimicrobial activity. So it was concluded that the antimicrobial activity of combined extracts of *Acalypha hispida, Acalypha nervosa* and *Acalypha fruitcosa* extracts were tested. The Combined methanolic extracts of *Acalypha hispida, Acalypha nervosa* and *Acalypha fruitcosa* were found to be poses powerful antimicrobial activity against the selected test organisms with standard**.**

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