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COMPARATIVE MICROSCOPICAL AND PHYSICOCHEMICAL INVESTIGATION OF TRADITIONAL PLANTS OF *Canscorea* SPECIES

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Abstract

The present paper deals with comparative Pharmacognosy and physicochemical investigation of two species of *Canscora* used by traditional healers in Vengurla region. The entire plant of both species is used by vaidus to cure and control viral and malarial fever. The fresh plants were collected and dried under shade and used for macros copy and Microscopy study as well as physicochemical studies. Raw materials and herbal extracts were investigated for phytoconstituents. Both species were bitter in taste. Glycosides, Steroids, Terpenoids and Anthroquone were present in *Canscora species.*

Keywords: *Canscora diffusa, Canscora perfoliata,* Microscopy, Gentiniaceae

#Short Communication

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Introduction

Canscora is annual and perennial herbaceous plants. Found in Asia and Africa and all over India. Genus *Canscora* used as a brain tonic and to cure cough, cold and fever. Three species are available viz. *Canscor*a *diffusa, Canscora perfoliata* and *Canscora decusata. Canscora* is Good medicine for memory improvements. Entire plants are used for different treatment and different diseases area. Bio-chemical composition such as various glycosides, sugars and acids are present in plants. Generally it is used for treatment of hypertension, hypotension, and stresses and liver tonic. According to Dictionary of Natural Product search total 27 compounds are reported from genus *Canscora*, Mostly compounds reported from genus *Canscora* was 1,2,3,4,6,8-Hexahydroxyxanthone, 3', 4', 5,7-Tetrahydroxyflavan. Glucosyloxy flavan and first isolated from Canscora diffusa. The Glucosyloxy flavan combination to produce extract for nervous system in Ayurveda botany use. (Nadkarni 1908, Kirtikar & Basu 1984, S.K.Jain 1991.)

Distribution

Plant specious is distributed throughout India, Ceylon, Malaya, Australia and Africa. In Kankan region it is found in Vengurla of Sindhudurg district. In Maharashtra is available in moist places from Ghats to plains; Kankavali, Achara road, Narrative, Phonda-Pawandevi Rai, Phondaghat, Kudal-Ghotage, Malwan-Adari– Nandruk, Savantwadi– Akeri–Mangaon Forest (M.R. Almeida– 219,1942, BNHS), Amboli, Hewale, Ramghat, Tilari, Mahadeogad. Panchgani, karmala, Malad, Khandala, Konkan. (Cook 1903, Kirtikar Basu 1984, Kothari 1993, Alameda 2001).

Material and Methods

Fresh plant materials were collected from three location of Vengurla region in winter season. Fresh material were press for herbarium and finally authenticated with the help of Blatter Herbarium, St. Xavier's College, and Mumbai. Collected materials wash properly and dry under shade. Dry materials were used for further investigation.

Preliminary Phytochemical Screening

Test of Carbohydrates: The pinch of (a little quantity) of sample / seed powder as well as extracts is dissolve in five milliliter of distilled water and filter through filter paper. The filtrate is then subject to the following test for detection of carbohydrates. *Fehling's Test*: Brick red precipitate, on addition of Fehling's- A and Fehling's- B after boiling indicates a positive test.

Test for Glycosides: A sample of seed powder as well as extracts is hydrolyzed with dilute (HCL) hydrochloric acid for some time by heating on a water bath; hydrolysis is then tested for the presence of glycosides by the following test. *Keller-Killiani Test:* On addition of glacial acetic acid, ferric chloride and concentrated hydrochloric acid, a reddish dark brown color is formed in between the two liquids and upper layer turn blue green color. This indicates that the test is positive test.

Test for Saponins: Crude material as well as extracts is diluted with distilled water (D/W) to make up to 20 ml and shake properly in a measuring cylinder for 15 minutes. One centimeter layer of persistent foam indicates the positive test for saponins.

Tests for Alkaloids: The crude material as well as extracts were treated with diluted HCL and filter it. The filtrate is used to the following tests:

Dragendorff's Test: Orange brown precipitate
Mayer's Test: Cream colored precipitate
Hager's Test: Yellow precipitate seen.
Wagner's Test: Reddish brown precipitate occurs.

Test for Flavonoids

Shinoda Test: The formation of pink color on addition of ethanol, hydrochloric acid and magnesium turnings indicates a positive test.

Foreign Matter in the Sample: 100 g of sample crude drug powder was taken and examined for the presence of any extraneous matter (like moulds, insects, animal feacel matter earth, stones etc.) with the unaided eye or by use of lens. The extraneous matter present is then separated, weighted and the percentage present is calculated Loss on Drying, pH of the Solution, ash value including Total ash. Acid soluble and acid insoluble Ash, Extractive Value like Water soluble and alcohol soluble and methanol soluble value were investigated and studied by using method

Observation and Discussion

Microscopy

Microscopic study of the plant drugs is to the study of internal structure observation of plant parts. To avoid adulterant and substitute and similarity in morphology anatomical study is required. When plant sources are found similarity in morphology then with the help of this study we separate or standardize the relative plant materials which we are used for research study. Canscora diffusa and Canscora perfoliata are morphologically similar. Diagnostic microscopic characters like types of stomata, nature of trichome, fiber thickening, calcium oxalate crystals and carbonate crystals are immerse evaluate for plant during standardization. Sometimes quantitative microscopy as palisade ratios, number of stomata and stomata index help in differentiating closely allied species.

T.S. of Stem

Transverse section of Canscora diffusa shows outer layer epidermis covered with thick cuticle. Epidermis is covered with trichome. Epidermis is outer layer parenchymatous thin walled oval cell. It follows cortex made up of loosely arranged oval shaped simple without intercellular space parenchyma tissues. Next to cortex follows the polygonal endodermis thin walled single layer. Phloem consists of pericyclic fibers, which occur in groups of phloem parenchyma. Xylem consists of vessels with reticulate and pitted

Table: 1. Phytochemical Investigation of *Canscora* Species

Sr. No.	Parameter	Canscora diffusa		Canscora perfoliata	
		Raw	Extract	Raw	Extract
01	Colour	Brown Green		Dark green	Brown
02	Taste	Bitter	Bitter	Bitter	Bitter
03	ASE %	13.0	98.3	11.5	98.7
04	MSE %	14.5	93.8	13.8	93.7
05	WSE %	12.0	87.9	10.8	89.3
06	Ash %	2.63	01.6	2.16	01.8
07	AIA %	0.81	00.5	00.63	00.3
08	ASA %	1.82	01.1	01.53	01.5
09	PH	4.05	04.1	04.00	03.9
10	LOD %	9.30	08.2	10.10	08.1
11	Acidity	2.36	04.6	02.28	04.8
12	Tannin %	-	-	-	-

Table: 2. Physicochemical Parameter of *Canscora* Species

Sr. No.	Parameter	*Canscora diffusa*		*Canscora perfoliata*	
		Raw	Ext.	Raw	Ext.
1	Alkaloids	-	-	-	-
2	Glycosides	+	+	+	+
3	Flavonoids	-	-	-	-
4	Steroids	+	+	+	+
5	Terpenoids	+	+	+	+
6	Saponins	-	-	-	-
7	Tannin	-	-	-	-
8	Anthraquinone	+	+	+	+

thickening. Medullary rays are 2-3 celled wide. Pith is composed of loosed arranged parenchyma cells. (Plate: 1.)

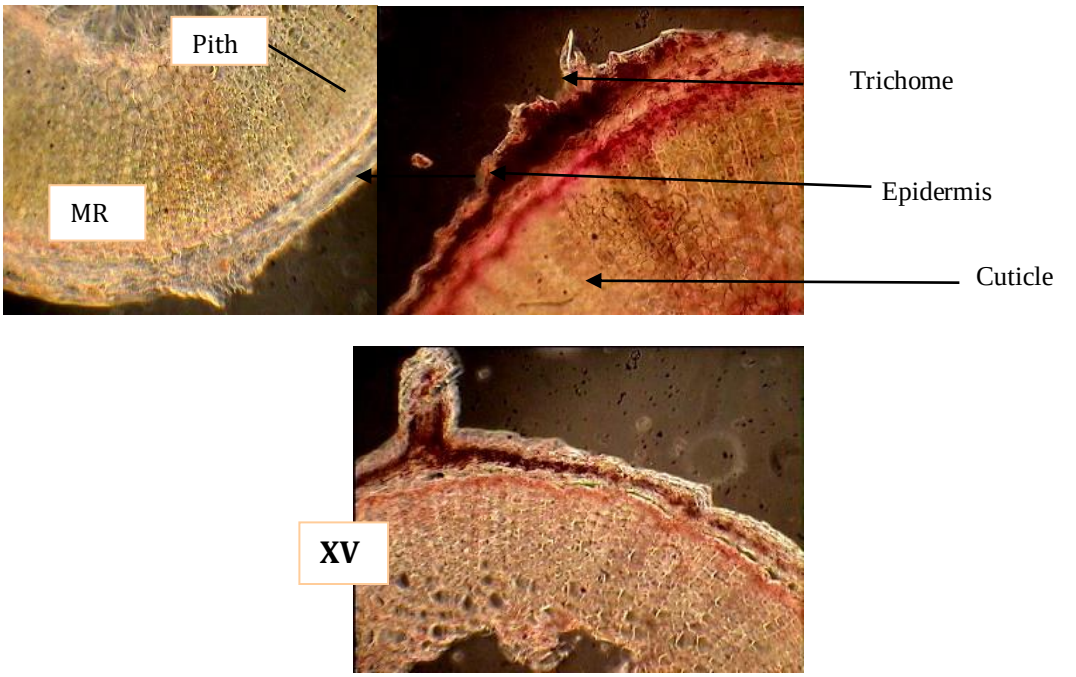
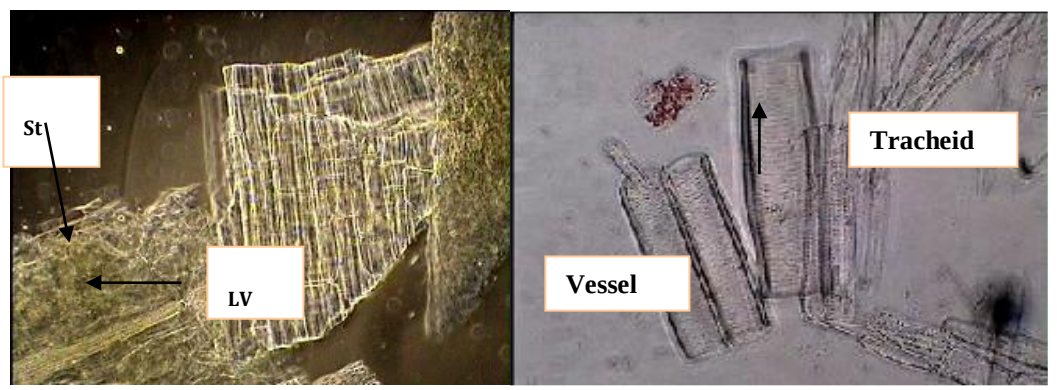


PLATE: 1. Transverse Section of *Canscora diffusa*

Powder Characteristic Study

Vessels and Tracheids are present with scalarform thickening and with simple and pitted pits. Stoma and trichome are present. Few numbers of cells contain spiral vessel and pitted vessel. (Plate: 2)



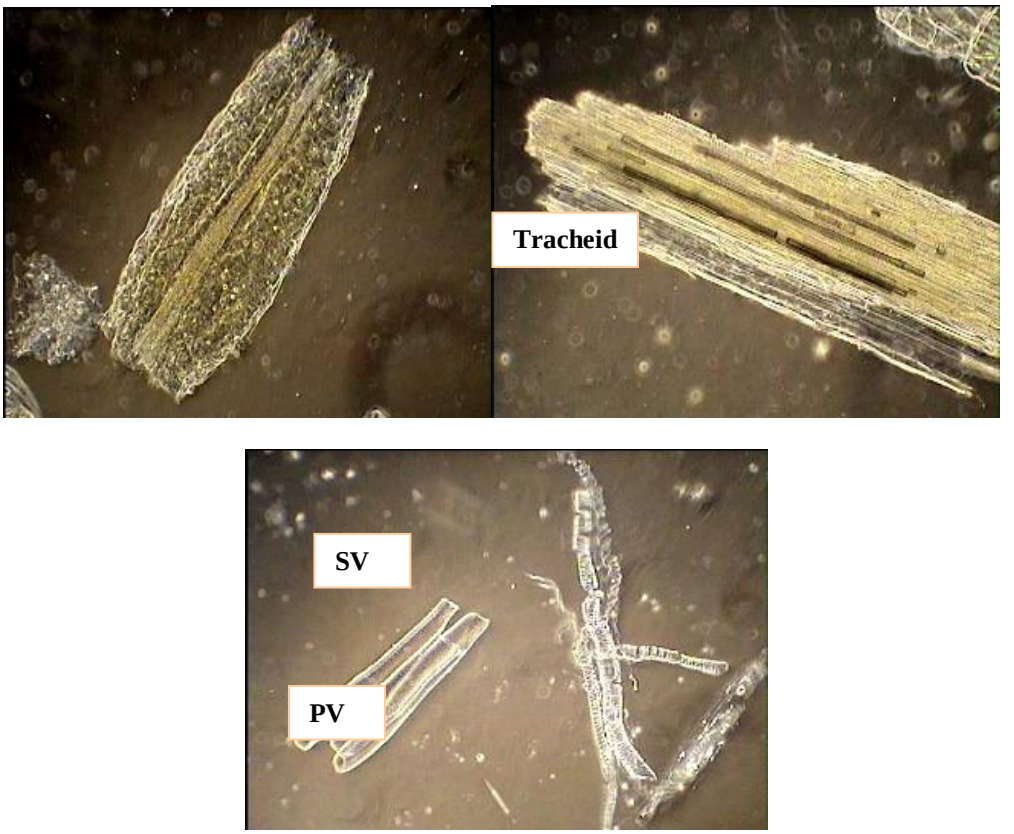


PLATE: 2.Powder Characteristic of *Canscora diffusa* Stem.

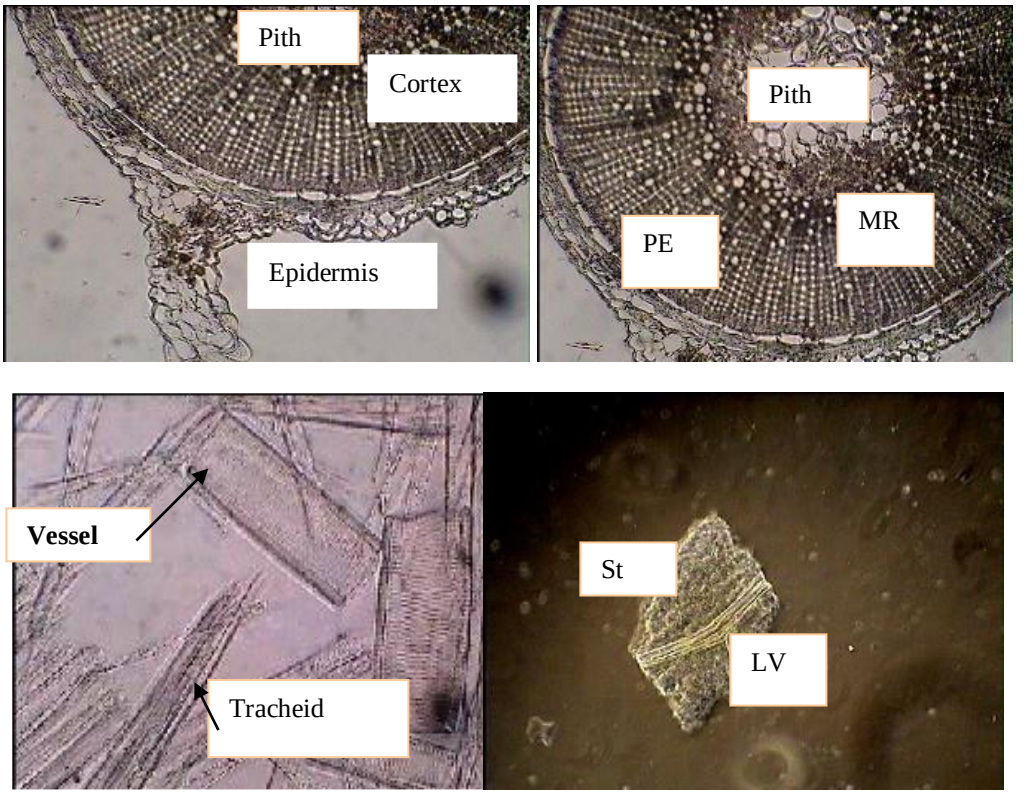
Canscora perfoliata

T. S. of stem

Transverse section shows single layer epidermis with thick cuticle and simple trichome. Epidermis is composed thin-walled polygonal cell. Collenchyma underlies epidermis below ridges. The cortex consists of loosely arranged thin-walled parenchymatous cells and pigment cells. Next to cortex follows are barrel shaped single layer endodermis cell. Phloem consists of pericyclic fibres, which occur in groups of phloem parenchyma. Xylem consists of vessels with reticulate and pitted thickening. Medullary rays are 2-3 celled wide. Pith is at the centre, composed of loosed arranged parenchyma cells.

Powder Characters

Vessels and Tracheids are present with salaried form thickening and with simple and pitted pits. Stoma and trichome are present. Few numbers of cells contain spiral vessel and pitted vessel.



Phytochemical Study

Alkaloid, glycoside, steroid and Anthroquone are present in both raw material and extracts of *Canscora.* While flavonoid, saponins, and tannin are absent in plant species. Phytochemical investigation was tabulated in Table: 1.

Physicochemical investigation of crude drugs and extracts of two species were studied and tabulated in Table: 2.Alcohol solubility is higher in extract as well as raw materials followed by methanol and water soluble extractive value. Ash percentage is higher in raw materials. All samples raw materials and extracts were bitter in taste. Loss on drying is found to be similar in all specimens who are tested.

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