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Pharmacognostic profiles of bark of *Bridelia retusa*

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ABSTRACT

In the present study we have carried out pharmacognostic evaluation of the bark of *Bridelia retusa* linn. (Euphobiaceae). Initially organoleptic evaluation was carried out followed by detail microscopical evaluation including the study of transverse section and microscopic characteristics of powdered bark of *Bridelia retusa* (Euphobiaceae). Under physical evaluation; total ash, sulphated ash, water soluble ash & acid insoluble ash were determined. Water soluble and ethanol soluble extractive values were also calculated. Loss on drying was carried out for determination of moisture content. Various chemical tests were carried out for qualitative determination of nature of phytoconstituents in the bark of *Bridelia retusa* linn.

KEYWORDS

Bridelia retusa;
Uphobiaceae;
Iroscopical characteristics;
hysical evaluation.

INTRODUCTION

Bridelia retusa is a deciduous shrub or a tree up to 18m in height, found throughout India up to an altitude of 1000m except in the very dry regions[1].A small or moderate sized deciduous tree, spinous when young: bark grey. Leaves numerous, 7.5-15 by 3.8-6.3cm rigidly coriaceous, elliptic-oblong, obtuse, subacute or rounded at the apex, with entire or slightly crenulate margins, bright green or glabrous above (turning pinkish-brown before falling), glaucous and usually finely tomentose beneath, base usually rounded (rarely cordate) ; main nerves prominent, straight, 15-25 pairs with finely reticulate venation between ; petioles 6-13mm long; stipules ovate-lanceolate, usually oblique at the base, deciduous. Flowers dioecious , greenish yellow, sessile or shortly pedicellate, crowded in dense axillary clusters or on long axillry or terminal, sometimes paniculate spikes often exceeding the leaves. Calyx greenish, tinged with red, 4mm diam., glabrous; segments fleshy, triangular-ovate, acute, spreading. Petals greenish white, those of the male flowers obovate, pectinate, those of the female flowers subspanthulate. Disk of the male flowers thick and pulpy, of the female flowers truncate, enclosing the ovary. Style short.Drupe fleshy, seated on the persistent slightly enlarged calyx, 8mm. dia., purple-black, edible. The bark is traditionally used for rheumatism[2], astringent[3], arthritis and antifertility[4]. The present work deals with the pharmacognostic profiles of bark.

MATERIALS AND METHODS

Plant material

The bark of the *Bridelia retusa* were collected from Dajipur jungle (Radhanagari wild life sanctuary), Kolhapur, Maharashtra. The Plant was authenticated

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by botany department, Willingdon College, Sangli and also by Dr.S.S.Sathe. The voucher specimen has been preserved in our laboratory for future reference.

Pharmacognostic studies

Organoleptic evaluation of bark was carried out. Behavioural characters of powdered bark of *Bridelia retusa* were carried out under UV (Short wave-length) and visible light by using different chemical reagents. Microscopic study of bark was carried out with the help of Photo-micrographic equipment (Make- Kyowa-Getner, Model-11UP with Bio-plus-55 software). Different staining reagents were used to study transverse section as well as microscopic characteristics of powdered bark. Under physical evaluation total ash, sulphated ash, water soluble ash, acid insoluble ash of the bark was calculated as per the procedure. Water soluble and alcohol soluble extractive values were also calculated[5]. Moisture content was determined by loss on drying[6]. Preliminary Phytochemical screening was carried out with different chemical reagents[7].

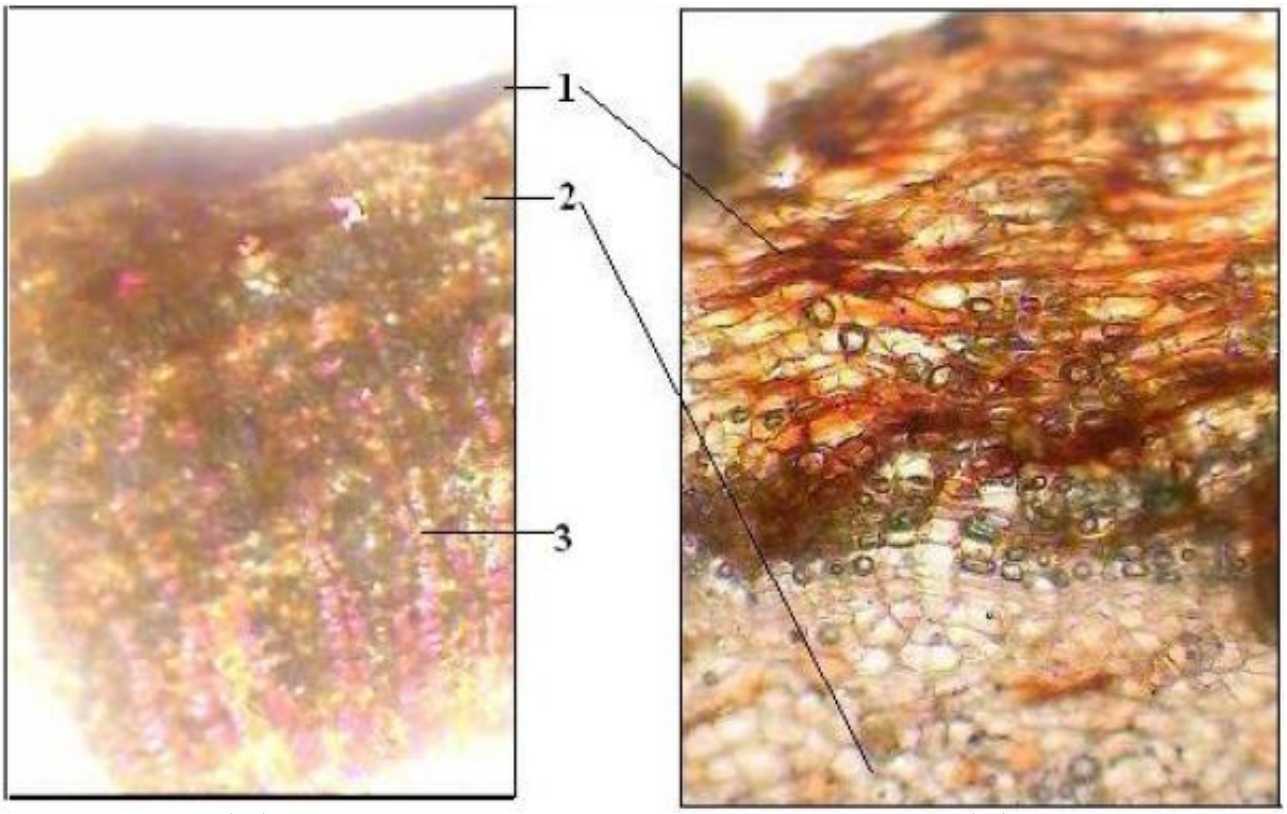
RESULTS AND DISCUSSION

Macroscopic characters

Drug occurs in the form of slightly curved pieces of bark of 5-6×0.3-0.5cm size. Outer surface of bark was reddish brown to pale brown in colour. Inner surface of bark was reddish in colour and finely striated, pilling out in thin flakes, fractures were fibrous. Bark was odourless & Taste was astringent.

Transverse section of bark showed cork, cortex and secondary phloem . cork cells were rectangular in shape having multilayered (15-20 layers). The cells were thick walled without intercellular space. They were reddish to golden yellow in colour. Cork was followed by 1-2 layers of Phellogen without any cellular content and 4-6 layers of Phelloderm. Cortex was parenchymatous, having oval to polygonal shape. The cortex showed presence of few cavities with blackish content.

Secondary phloem consists of phloem fibers, Phloem parenchyma, Medullary rays. Phloem fibers were in rectangular patches. T. S. of bark looks like a mesh possessing phloem fibers and secondary phloem. Med-



(A) (B)

1.- Cork 2.- Cortex. 3.- Secondary phloem

ullary rays were 2-3 seriate. Calcium oxalate were found in cells of cortex and Phloem parenchyma in secondary phloem. Starch grains were very few.

Powder characters

Cork: Thick walled, rectangular to oval shape, cells were reddish to golden yellow color

Lignified fibres

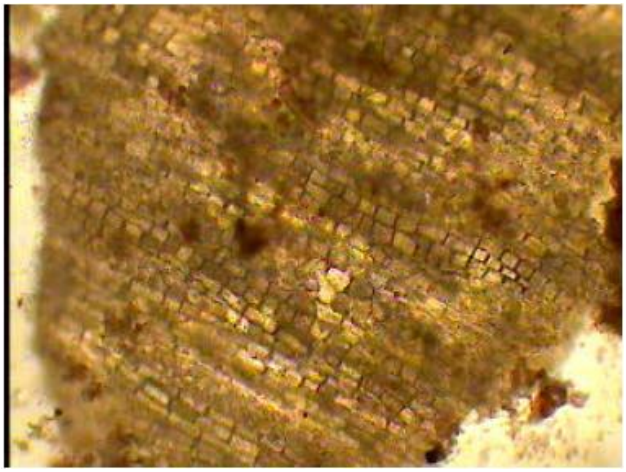
Fibres were lingnified. They were non-libriform, having very thick wall. The fibres were very long, slender. fibers are 38-66μ in length.

Medullary rays

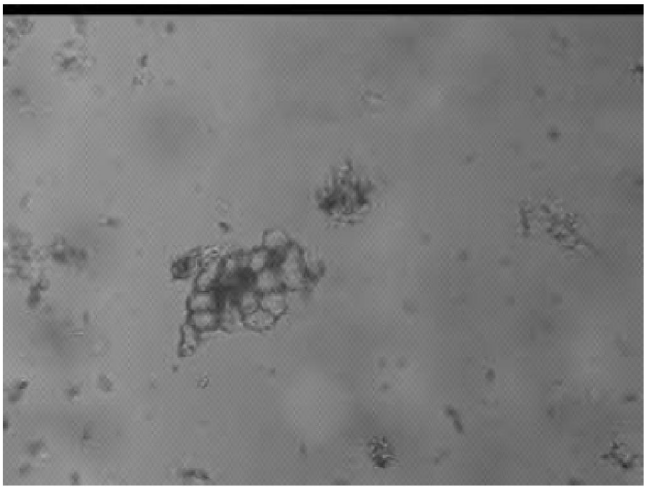
They were several millimeter in height. They were markedly heterogenous, often with more than 10 marginal rows of upright cells. They may be biseriate to multiseriate.

Calcium oxalate crystals

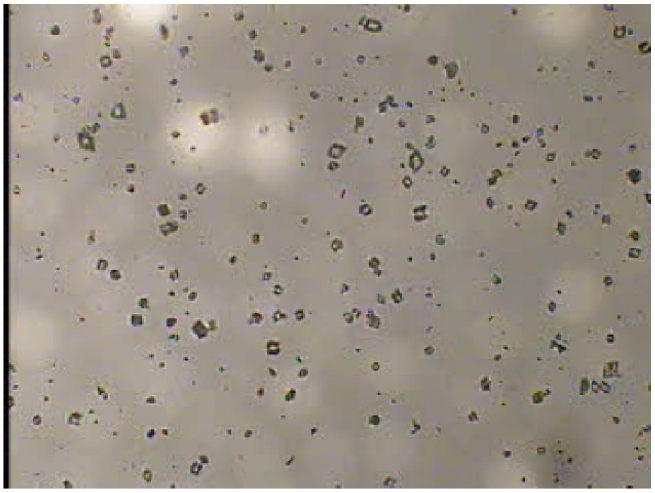
Crystals were of tetragonal prism type having 9-10μ in size.



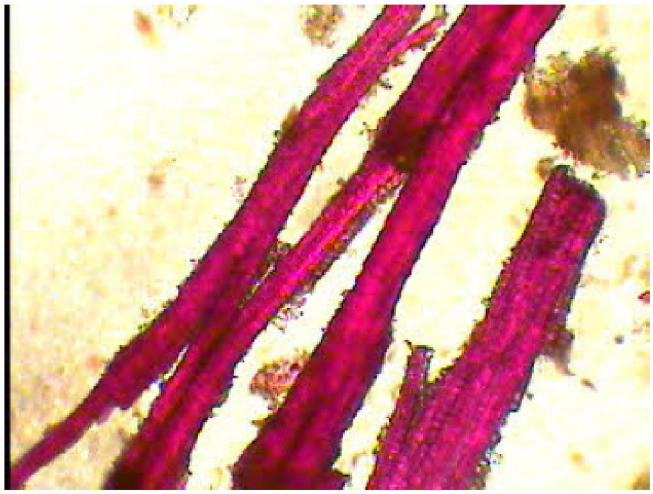
Medullary rays



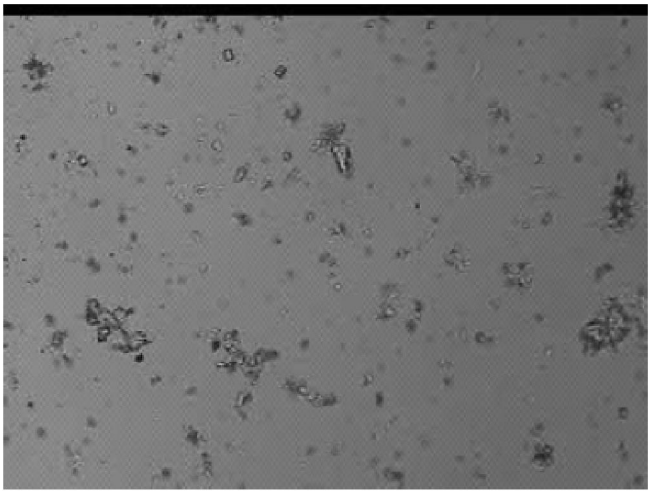
Cork



Calcium oxalate crystals



Lignified fibres



Starch grains

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Starch grains

Starch grains were very few, simple, 5-10μ in diameter.

The behavioural characters of powdered bark are represented in TABLE 1.

The physical evaluation parameters *Bridelia retusa* bark revealed total ash (9 %), sulphated ash (12%), water soluble ash (1.51%), acid insoluble ash (1.09%), water soluble extractive value (8.28%), alcohol soluble extractive value (7.50%) and loss on drying (17.3%).

TABLE 1: Behavioural characters of powdered bark of *Bridelia retusa*

Sr. No.	Particulars	Under Visible light	U.V. Light Short wavelength
1	Powder as such	Brown	Light Brown
2	Powdered drug+ Conc. HCl	Brown	Dull Green
3	Powdered drug+ Conc. H_2SO_4	Brown	Dull green
4	Powdered drug+ Conc. HNO_3	Dull brown	green
5	Powdered drug+ G.A.A.	Light Brown	Green
6	Powdered drug+ NaOH(Aq.)	Dark brown	Dark green
7	Powdered drug+ NaOH (Alc.)	Greenish yellow	Green
8	Powdered drug+ 10% HCl	Light brown	Dull green
9	Powdered drug+ 10% H_2SO_4	Dark brown	Dark green
10	Powdered drug+ 10% HNO_3	Light brown	Dull green
11	Powdered drug+ $FeCl_3$ (Aq.)	Greenish	Dark green
12	Powdered drug+ $FeCl_3$ (Alc.)	Black	Dull green

The qualitative chemical tests revealed the presence of flavonoids, steroidal terpenoids and tannins in the bark of *bridelia retusa*.

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REFERANCES

[1] Anonymous, In; 'The wealth of India: A Dictionary of Indian Raw Materials and Industrial Products', 2nd Edn., B, Publications and information Directorate, C.S.I.R., New Delhi, **2**, 295 **(1988)**.

[2] K.R.Kirtikar, B.DBasu; 'Indian medicinal plants', 2nd Edn., International book distributors, Dehradun, **3**, 2213 **(1999)**.

[3] K.M.Nadkarnis; Indian Material Medica, **1**, 219, Popular Prakashan.

[4] S.K.Jain; In; 'Dictionary of Indian Folk Medicine and Ethnobotany', Deep Publications, New Dehli, 38 (1991).

[5] C.K.Kokate, A.P.Purohit, S.B.Ghokale; 'Pharmacognosy', Nirali prakashan, 111-113 **(2006)**.

[6] V.D.Rangari; 'Pharmacognosy and Phytochemistry', 1st Edn., Career Publications, 90 (2002).

[7] K.R.Khandelwal; 'Practical Pharmacognosy, Techniques and experiments', 18th Edn., Nirali prakashan, 149-153 **(2007)**.