Current Pharma Research
ISSN: 2230-7842
CPR 2(4), 2012, 634-636.

Pharmacognostical and Preliminary Phytochemical Studies of *Diospyros Melanoxylon* Roxb. Leaf.

[1*]Parmar R. N., [1]Joshi A. A., [2]Patel B. H.

[1*]Singhania University, Jhunjhunu, Rajstan, India, [2]Dhanvantari College of Pharmacy, Surat, Gujrat, India.

Abstract

Coromandel Ebony or East Indian Ebony (*D. melanoxylon* Roxb.) is a species of flowering tree in the family Ebenaceae that is native to southern India and Sri Lanka. Pharmacognostical study of leaves gave idea about the morphology indicated oblong leaf with sub-acute apex, Entire margin, reticulate venation, symmetrical base, pubescent, opposite phyllotaxy. Transverse section of *D. melanoxylon* leaf showed Dorsiventral lamina, sclerenchymatous sheath surrounding vascular bundle, branched covering trichomes and glandular trichomes and diacytic stomata. Physical constants such as Ash value, extractive value and loss on drying were determined. The preliminary phytochemical screening showed the presence of steroids and triterpenoids in Petroleum ether extract; flavonoids, tannins and phenolic compounds, sterols and triterpenoids in ethyl acetate extract; flavonoids, tannins and phenolic and steroids in alcoholic extract; carbohydrates, proteins, amino acids, flavonoids, tannins in aqueous extract. The present study helps for identification and evaluation of crude drug.

Key Words

D. melanoxylon Roxb., Ebenaceae, Pet ether extract, Ethyl acetate extract.

Introduction

D. melanoxylon Roxb. is a species of flowering tree in the family Ebenaceae that is native to southern India and Sri Lanka.[2] It is used in an Indian cigarette product known as beedi in wrapping the tobacco together to be smoked[3]. The genus *Diospyros* species (Ebenaceae) were growing in subtropical and tropical areas of the China, India, Indonesia, and the Malay Peninsula. The genus *Diospyros* consists of 240 species, 59 of which are distributed in India.[2] The plant and parts, especially the fruit has been used as an anti-inflammatory and antipyretic drug in many local traditional medicines.[4] But no Pharmacognostical work is reported on this plant. Therefore, detailed Pharmacognostical parameters were studied of this plant.

Materials and Methods

Collection and Authentication of plant material

The plant was collected from forests of Vankaneda, Dist. Sabarkantha, Gujarat, India. The fresh leaves were collected and then dried. The plant was identified and authenticated as *Diospyros melanoxylon* Roxb. by Dr. Bimal Desai, Department of Botany, Agriculture University, Navsari, Gujarat, India.

***Corresponding Author:**
parmar.renuka@gmail.com

Methods

Morphology, microscopy and physical constants like ash value, extractive value and loss on drying for the leaf of *Diospyros melanoxylon* Roxb. was studied. Also preliminary phytochemical investigation of all extracts was carried out.[1]

Results and Discussion

Leaves of *D. melanoxylon* Roxb. are Simple, oblong with sub-acute apex, 15.3 cm long and 8.2 cm broad, Entire margin, reticulate venation, symmetrical base, pubescent, opposite phyllotaxy (Fig. 2).Transverse section of *D. melanoxylon* leaf showed Dorsiventral lamina, sclerenchymatous sheath surrounding vascular bundle, branched covering trichomes and glandular trichomes and diacytic stomata (Fig. 3, 4).
Results of ash values, extractive values and loss on drying were given in table 1, 2, 3. It shows 2.65% total ash, 1.15% acid insoluble ash and 1.35% water soluble ash. Extractive yield of different extract was 29.6% methanolic extract, 6.4% pet ether extract, 16% aqueous extract and 7.47% ethyl acetate extract. LOD is found to be 5.1%.

The preliminary phytochemical screening of *D. melanoxylon* Roxb. showed the presence of steroids and triterpenoids in Petroleum ether extract; flavonoids, tannins and phenolic compounds, sterols and triterpenoids in ethyl acetate extract; flavonoids, tannins and phenolic and steroids in alcoholic extract; carbohydrates, proteins, amino acids, flavonoids, tannins and phenolic and tartaric acid as an organic acid in aqueous extract as shown in Table 4.

Conclusion

The Pharmacognostical study and preliminary phytochemical screening of *D. melanoxylon* Roxb. leaf helps in correct identification of drug and this preliminary information will be helpful in future for further study on leaves of *D. melanoxylon* Roxb.

References

1. Khandelwal K.R., Practical Pharmacognosy, Techniques and Experiments, 9th ed, 2002; Nirali Prakashan, 149-156.
2. Muthiah Maridass, S. Ghanthikumar, G. Raju. Preliminary Phytochemical Analysis of Diospyros Species, Ethno botanical Leaflets, Vol.12, Issue 1, 2008, 868-72.
3. Sastry, B.N. in The Wealth of India, Raw Materials, CSIR, New Delhi, 1952, vol-III, 76.
4. Kirtikar K.R. and Basu B.D., Indian Medicinal Plants, 2nd ed., Vol.-II, Dehradun, India International Book Distributors, 1999, .2155-56.
5. S. K. Pandya, D. Dubey, S. K. Dutta, Anticandidal activity of *Diospyros melanoxylon* bark from Similipal Biosphere Reserve, Orissa, India. International Journal of Green Pharmacy, 2010, 102-107.

Fig.1: Plant of Diospyros melanoxylon Roxb.

Fig.2: Leaf of D. melanoxylon Roxb.

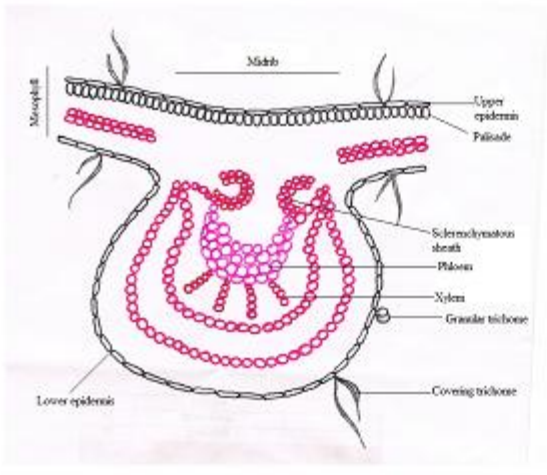

Fig. 3: T. S. of leaf of D. melanoxylon Roxb.

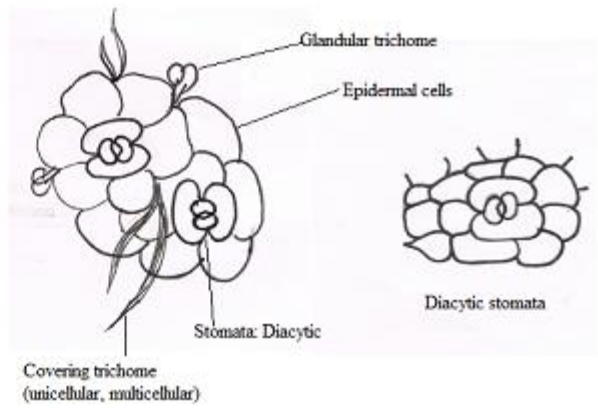

Fig. 4: Surface preparation

Table 1: Ash values.

Ash value(% w/w)	
Total Ash value	2.65%
Acid insoluble ash	1.15%
Water soluble ash	1.35%

Table 2: Extractive values.

Solvent	**Color & Consistency**	**Extractive value in % w/w**
Methanol (95%)	Dark Green & Thick	29.6%
Petroleum ether	Dark Brown & Thick	6.4%
Water	Dark Brown & Thick	16%
Ethyl acetate	Reddish brown, semi-solid	7.47%

Table 3: Loss on Drying.

Test	**Value**
Loss on drying	5.1% w/w

Table 4: Preliminary phytochemical screening of *Diospyros melanoxylon* Roxb.

Sr. No.	**Test**	***Diospyros melanoxylon* Roxb.**			
		Aqueous Extract	**Alcoholic extract**	**Ethyl acetate extract**	**Pet. ether Extract**
1.	Test for Carbohydrates	++	+	-	-
2.	Test for Proteins	+	-	-	-
3.	Test for Amino acids	+	-	-	-
4.	Test for Alkaloids	-	-	-	-
5.	Test for Glycosides	-	-	-	-
6.	Test for Saponins	-	-	-	-
7.	Test for Flavonoids	+	+	++	-
8.	Test for Tannins and phenolics	+	+	+++	-
9.	Test for Steroids and sterols	-	+	++	+
10.	Test for organic acids Test for Tartric acid	+ +	- -	-	- -
11.	Test for Fats and Oils	-	-	-	-

(+) = slightly present, (++) = clearly present, (-) = absent

******