IRJSE International Research Journal of Science & Engineering
Int. Res. J. of Science & Engineering, Special Issue A9, July, 2020
ISSN: 2322-0015
SJIF Impact Factor 6.70
RESEARCH ARTICLE
OPEN ACCESS

Pharmacognostic study of Sapindus Emarginatus Vahl.

Kanthale Prakash R

Department of Botany, Nutan Mahavidyalaya, Selu, Dist. Parbhani, MS, India
*Corresponding author Email: knthle@rediffmail.com | drkanthale1974.pk@gamil.com

Manuscript Details
Available online on https://www.irjse.in
ISSN: 2322-0015

Editor: Dr. Arvind Chavhan

Cite this article as:
Kanthale Prakash R. Pharmacognostic study of Sapindus Emarginatus vahl., *Int. Res. Journal of Science & Engineering,* 2020, Special Issue A9: 189-192.

Article published in Special issue of International e-Conference on "Emerging trends and Challenges In life sciences" organized by Department of Botany, Indraraj Arts, Commerce & Science College, Sillod-431112, Dist Aurangabad, Maharashtra, India date, June 18-19, 2020.

Abstract

Sapindus emarginatus Vahl. a large sized tree belongs to Sapindaceae family, commonly called as Ritha. Ritha is useful medicinal plant used in the treatment different diseases. The Bark and fruit of plant is used by tribals, villagers and herbalist to treat eye diseases, diarrhea, Paralysis, Asthma, Nausea, Severe headache, Snake bite, Toothache, Dysentery and effective to reduces hair loss. The Pharmacognostic studies of plant drug are carried out for evaluation of drug and to detect the adulteration. It includes dermal characters like trichomes, stomata and anatomical features. The plant was analyzed for its preliminary screening of phytochemicals. The result reveals that the presence of bioactive constituents comprising Alkaloid, Tannin, Reducing sugar, Flavonoids, Saponins, Glycosides and Cardiac Glycosides. Antimicrobial assay also conducted to prove the proclaimed ethnobotanical claims. Present study helpful to standardize or evaluation of drugs.

Keywords: *Sapindus emarginatus* Vahl. Pharmacognostic studies, Phytochemicals, Diseases, Mahur forest.

Introduction

Sapindus emarginatus Vahl. is a large tree; young shoot is covered with rusty tomentose. Leaves are abruptly pinnate, leaf lets are subopposite. Flowers are interminal panicles, male flowers are many and bisexual few, pedicel is short, panicle is covered with rusty timentose, sepals are greenish with rusty tomentose, and petals are white free. Drupes are lobed clothed with rusty tomentose, dark brown. Seeds are black, smooth. *Sapindus emarginatus* Vahl. Is used by the

used by tribals, villagers and herbalist to treat of different diseases. (Fig.1). The leaves are used in the treatment of heavy cold [1]. Fruits are used as hair tonic [2]. Fruit s are used in the treatment of Severe headache and snake bite [3]. Powdered seeds used to cure toothache and fruit pulp is used in dandruff [4]. Fruit is used in the treatment of asthma, colic and dysentery and Nausea [5, 6] Fruit is used in the treatment of diarrhea Nausaia and paralysis of limbs [7].

Methodology

Plant material:
The Fruit and Stem Bark of *Sapindus emarginatus* Vahl. Were collected from College Campus Nutan Mahavidyalaya Sailu, Dist. Parbhani Maharashtra. The collected plant was taxonomically identified by using renowned floras [8-11]. The voucher specimen was deposited in Department of Botany, Nutan Mahavidyalay Sailu, Dist. Parbhani. The Fruit and Stem Bark were shade dried and powdered. The powdered Fruit and Stem Bark were successively extracted with different solvent. The leaves and stem were used for the study of macroscopic and microscopic characters.

Preliminary phytochemical Screening:
Phytochemical screening of Stem bark and Fruits extracts of *Sapindus emarginatus* Vahl. in different solvent were undertaken by using standard method for the analysis phytochemicals like alkaloids, glycosides, flavonoids, tannins, saponins, terpenoids and cardiac glycosides [12].

Prepearation of extract:
Fruit and Stem bark powder was subjected to Soxhlet extraction with petroleum ether (60-80^{0}c), Methanol (64.5-65.5^{0}c) and water for 3-4 h in the order of increasing polarity of solvents [13]. The extracted solvent is evaporated to make the final volume one fourth of its original volume. Yield of Fruit extracts are 9.2, 10.8 and 12.2 % respectively and Yield of Stem bark extracts are 10.3, 14.8 and 19.5 % respectively. Both extracts are stored at 4^{0}c in airtight bottles for further study.

Pharmacognostic studies:
Macroscopic study:
Morphological studies were done using simple microscope. The shape, apex, base, margin, taste and odour of plant powder were observed.

Microscopic studies:
The free hand transactions of stem were taken and stained by using double stained differential staining technique and mounted in DPX [14]. Photographs were taken with the help of digital camera. The leaf is peeled off for the study of stomata and the trichomes of upper and lower epidermis.

Observations

T. S. of Stem: The transverse section of stem is wavy in outline. The single outermost layer is epidermis with thick cuticle. On epidermis a smaller number of stomata are present. Beneath the epidermis thick hypodermis is present followed by multilayer parenchymatous cortex. The pericycle and endodermis is not clearly visible. Next to the parenchymatous cortex a ring of conjoint, collateral and open vascular bundles are present. Pith is parenchymatous, multi layered and present in center. (Fig.2)

Stomata: The stomata reported on lower surface. The stomatas of lower surfaces are Anomocytic, the guard cells are surrounded by 5 to 6 subsidiaries. (Fig. 3 A and 3B).

Trichome: The trichomes are reported on both the surfaces of leaf. The trichomes of both the surfaces are Unisariate filiform with cytoplasmic content, the foot is embedded into epidermal cell and tip of the trichome is pointed. The trichomes of upper are longer than lower surface. (Fig. 4 A and B)

Phytochemical constituents: The preliminary phytochemical analysis of Stem bark and Fruit shows the presence of Reducing Sugar, Tannin, Flavonoids, Glycoside, Cardic glycosides, Alkaloid, Saponins. The

Anthraquinones, Phlobatannins and Terpenoid are absent (Table. 1).

Powder analysis: The Fruit powder was characterized by its morphological features like yellow colour; presence of specific odour and bitter taste. The Stem Bark powder was characterized by its morphological features like Yellow brown colour; presence of specific odour and bitter taste (Table. 2 & 3).

Fig. 1. *S. emarginatus*

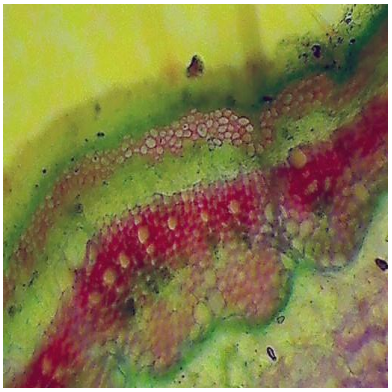

Fig. 2. T. S. Of Stem

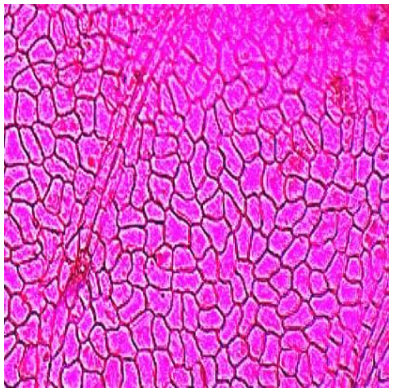

Fig. 3.A- Stomata Lower epidermis

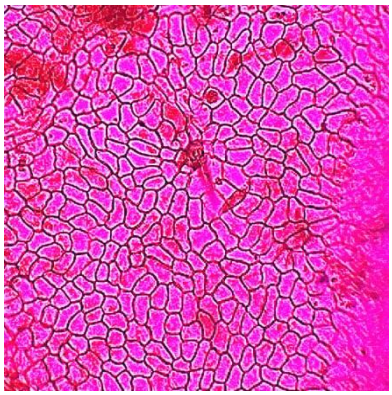

Fig. 3.B- Stomata Upper epidermis

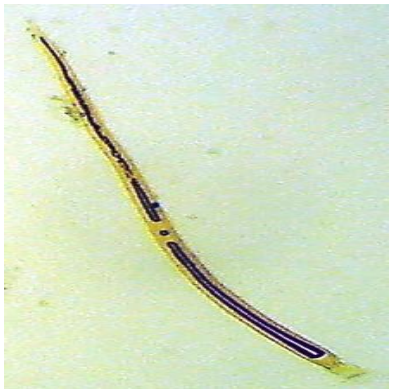

Fig. 4.A- Trichome Upper epidermis

Fig. 4.B- Trichome Lower epidermis

Discussions and Conclusion

The present study shows that the *Sapindus emarginatus* Vahl. used by Tribals, Villagers and Herbalist to treat various diseases. The extracts of stem bark and fruits of *Sapindus emarginatus* Vahl. contains various bioactive compounds like Reducing Sugar, Tannin, Flavonoids, Glycoside, Cardic glycosides, Alkaloid, Saponins. The presence of this bioactive compound this plant is used in traditional medicine to cure various diseases. Phytochemical analysis of is very important in identifying new sources of therapeutical and industrial importance [15]. The pharmaceutical and antimicrobial studies could be done that will further elucidate and characterize the active components and authenticate its folkloric efficacy.

Acknowledgments:
Author thankful to Dr. S.S. Kulkarni, Principal, Nutan Mahavidyalaya, Sailu for providing necessary facilities and encouragement. The author thankful to Dr. V.K. Kothekar Ex-Principal Nutan Mahavidyalaya, Sailu and Dr. S.D. Biradar, Ex H.O.D. Department of Botany D.S.M. College Parbhani for their constant inspiration.

Conflicts of interest: The authors stated that no conflicts of interest.

References

1. Bharath Kumar R. and Suryanarayana B. Ethnomedicinal Recipes for Respiratory and Bronchial diseases from Tribal of Sriharikota Island, Andhra Preshes. *Ethnobotanical Leaflets,* 2008; 12: 896-911.
2. Vijigiri Dinesh and Sharma P. P. Traditional Uses of Plants in Indigenous Folklore of Nizamabad District, Andhra Pradesh, India. *Ethnobotanical Leaflets,* 2010; 14: 29-45.
3. Swapna Gurrapu and Estari Mamidala. An ethnobotanical survey of medicinal plants used by traditional Healers of Perkapally, Karimnagar district, Telangana, India. *Int. J. of Life Sciences*, 2018; 6 (3):789-794
4. Nanda,Y., Nengnunnem Singson and Nageswara Rao, AEthnomedicinal plants of Thadou tribe of Manipur (India) -1. *Pleione,* 2013; 7(1): 138 - 145.
5. Dr. Kul Bhaskar. Ethnobotany and Conservations Status of Sponin Rich Plants of Gangetic Plain Having Both Medicinal and Cleansing Properties. *Plant Archives,* 2018; Vol. 18 No. 1, 2018 pp. 81-97
6. Rupesh Maurya and Nitin Dongarewar . Studies on the Medicinal uses of Wild Trees of Nagpur District. *International Journal of Life Science and Pharma Research*, 2012; Vol 2(1).
7. Lenin Bapuji J. and Venkat Ratnam S. Traditional Uses of Some Medicinal Plants by tribals of Gangaraju Madugula Mandal of Visakhapatnam District, Andhra Pradesh. *Ethnobotanical Leaflets,* 2009; *13: 388-98.*
8. Naik, VN. Flora of Osmanabad, Venus publishers, Aurangabad, 1979.
9. Naik, VN. and Associates. Flora of Marathwada, Amrut Prakashan, Aurganagabad, 1998.
10. Chetty, Mahdhava, K., Sivaji, K. and Tulsi Rao, K. Flowering plants of Chittor District, Andrapradesh, India, Students offset Printers, Tirupati. 2008.
11. Yadav SR. and Sirdasai MM. Flora of Kolhapur District. Shivaji University Kolhapur, Maharashtra, India, 2002.
12. Harborne, JB. Phytochemical Methods. A guide to modern techniques of plant analysis, 2nd Edition, Chapman and Hall, 1984.London.Haslam, E. Natural polyphenols (Vegetable tannins) as drugs: possible modes of action, *J. Nat. Prod,* 1996; 59: 205-15.
13. Daniel M. "Methods in plant biochemistry and economic botany" Kalyani publication New Delhi, 1991.
14. Johanson, DA. plant microtechnique, McGraw Hill New York, 1940,
15. Savitraramma, N., Lingorao, M and Ankanna,S. Screening of Traditional Medicinal Plants for Secondary Metabolites. *Int.J.Res.Pharm.Sci*, 2011; 2(4):643-647.