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PHYTOCHEMICAL INVESTIGATION OF THE FLAME AMHERSTIA NOBILIS

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Abstract
A study has been conducted to investigate the phytochemical components of native plants. Approximately plants were gathered from the Raja pur area. The gathered plants were extracted and then allowed to evaporate. The produced plant extract is subjected to phytochemical analysis in order to investigate its active ingredients, which are crucial for the creation of new drugs.

Introduction

Phytochemical investigation of the flame Amherstia nobilis involves the study and analysis of the chemical composition of this plant species. This process typically aims to identify and characterize the various phytochemicals present in the plant, which can have beneficial properties for human health.

The flame Amherstia nobilis, also known as Pride of Burma or Queen of Flowering Trees, is a tropical tree renowned for its striking red flowers and ornamental value. Phytochemical studies on this plant may reveal the presence of bioactive compounds such as flavonoids, alkaloids, terpenoids, tannins, phenolic compounds, and other secondary metabolites.

The phytochemical investigation of Amherstia nobilis can provide valuable insights into its potential medicinal or therapeutic properties. Researchers may conduct various methods such as extraction, chromatography, spectroscopy, and bioassays to isolate and identify the specific phytochemicals present in the plant.

Amherstia nobilis known as the Pride of Burma) is a tropical tree belonging to the family Fabaceae. It is renowned for its large, showy flowers and is the only member of the genus *Amherstia*. Although widely cultivated for ornament in the humid tropics, it is extinct in the wild, known only from a single wild specimen recorded in 1865. Native to Burma (Myanmar), its common name reflects its origin. The scientific name commemorates Lady Amherst and her daughter Sarah, similar to Lady Amherst's pheasant. Another common name, orchid tree, is also used for members of the genus Bauhinia.

Description

The extravagant flowers of *Amherstia nobilis* hang from a long inflorescence, or flower stalk, which is bright crimson red at the end. The flowers have five petals, although two are minute and

the remaining three are of unequal size. These crimson petals include two medium-sized ones tipped with yellow and a large, fan-shaped petal with a wavy upper margin and a yellow triangle extending from the lip down into the flower. This large petal can reach 7.5 centimeters in length and over 4 centimeters in width at the end. There are either nine or ten stamens, nine of which are partially fused into a pink sheath. The stamens vary in length, with the longer ones having larger anthers. The compound leaves bear 6-8 large, broadly oblong leaflets that are pallid underneath..[1-5]

The Rigveda, which was composed in India between 3500 and 1600 B.C., is where the oldest mention of medicinal plants can be found. The Artharveda also contains extensive descriptions of a number of medicinal plants. Just a small percentage of the plants have been cultivated; most are wild. Research on therapeutic plants is currently being conducted using both ancient texts and contemporary perspectives.[6-8]

The presence of unique compounds such as alkaloids, glycosides, resins, volatile oils, gums, and tannins, among others, gives a plant its medicinal value. These active ingredients are typically concentrated in the plant's storage In light of all of these details, the current study aims to determine the phytochemical composition of a few native plants that exhibit strong anti-endoparasite (tick and mite) properties.[9-14]

2.1. Materials and Methods

Selection and Authentification of Plants

Plants were selected on the basis of literature and indigenous traditional knowledge grown plants in aquariums with ideal conditions for their growth. Depending on the kind, plants are grown in farms under either submerged or immersed conditions. Therefore, the plant/leaf structures may differ from the ones pictured. They will take on the appearance depicted in the photographs when grown submerged in aquariums with the light, CO2, and nutrients that the plant need.The aquatic plant Eriocaulon breviscapum, also referred to as Dwarf Spikerush or , is distinguished by its unusual look and small stature. This delicate plant, which is native to Asia, belongs to the family Eriocaulaceae. It grows best in areas with stagnant or slowly running water. Because of its unique rosette structure and diminutive size, Eriocaulon breviscapum is a highly sought-after option for aquascaping fans.[15-18]

Prepare Plant Extracts

In accordance with Kokate et al.[2], the Soxhlet extraction method was used to prepare the crude plant extract. A thimble containing roughly 100 grams of powder was evenly packed, and the mixture was processed through a Soxhlet extractor. Methanol was used to extract it exhaustibly over a 48-hour period, or 22 cycles, or until the solvent in the extractor's siphon tube turned colorless. In order to achieve a syrupy consistency, the extracts were then filtered using filter paper and allowed to evaporate in a rotary evaporator. To get rid of any alcohol residue, the residue was dried over anhydrous sodium sulfate. After that, the extract was refrigerated at 4°C to analyze its chemical and physical properties and look for antibacterial activity.[19-20]

How to Prepare Plant Extracts

Chemical and Physical Analysis of Unrefined Extract Physical characteristics were observed, primarily nature, consistency, color, and odor. Common solvents such as distilled water, ethanol, methanol, petroleum ether, acetone, and chloroform were employed to test the extracts' solubility. [21-25]

Examining the phytochemistry of several crude extracts

The presence of active ingredients including proteins, glycosides, alkaloids, flavonoids, triterpenoids, tannins, and phytosterols was examined in the extracts. Standard operating procedures [3] were applied.

Check for Protein

When 2 ml of Millon's reagent (mercuric nitrate in nitric acid with traces of nitrous acid) was combined with crude extract, a white precipitate that turned red when heated gently was produced. This is known as Millon's test. Test for ninhydrin: Crude extract turned violet when it was heated with a 0.2% solution of ninhydrin (Indane-1,2,3-trione hydrate). implying the existence of protein and amino acids.[26-30]

Check for Sugar

Benedict's Test: An alkaline solution containing a cupric citrate complex was mixed with a few drops of the crude extract and heated in a water bath. The formation of a reddish-brown precipitate indicated the presence of sugars.[31]

Fehling's Test: To test for reducing sugars, equal volumes of Fehling A (copper sulfate in distilled water) and Fehling B (potassium tartrate and sodium hydroxide in distilled water) were mixed with a few drops of the crude extract and boiled. The formation of a brick-red precipitate of cuprous oxide suggested the presence of reducing sugars.[32-37]

Check for tannins.

Crude extract was combined with 1% gelatin solution containing 10% sodium chloride for the gelatin test. There was a white precipitate that showed tannins were present.Crude extract and ferric chloride were combined for the ferric chloride test. The color turned blue-green, indicating the presence of tannins.

Check for saponins

Froth Examination: In a semi-micro tube, 1 ml of water was mixed with the crude extract and thoroughly shaken. The formation of persistent froth indicated the presence of saponins.

Hemolysis Test: A mixture of 0.2 ml of crude extract and 0.2 ml of blood (diluted with normal saline) was centrifuged. The presence of a red supernatant, compared to a colorless control, indicated the presence of saponins.

Check for Alkaloids

Mayer's Test: The crude extract was mixed with potassium mercuric iodide solution. The development of a cream-colored precipitate indicated the presence of alkaloids.

Dragendorff's Test: Potassium bismuth iodide solution (Dragendorff's reagent) was added to the crude extract. The formation of a reddish-brown precipitate suggested the presence of alkaloids .**Check for Flavonoids**

Shinoda Test: Magnesium ribbon pieces were added to the crude extract, followed by drops of concentrated hydrochloric acid. After a few minutes, a pinkish-scarlet hue appeared, indicating the presence of flavonoids.

Alkaline Reagent Test: A small amount of sodium hydroxide solution was mixed with the crude extract, resulting in a bright yellow color. Upon adding a few drops of diluted acid, the yellow color turned colorless, signifying the presence of flavonoids.

Check for Triterpenoids and Steroids

Liebermann-Burchard Test: After boiling and cooling the crude extract, a few drops of acetic anhydride were added, followed by concentrated sulfuric acid (H_2SO_4) poured down the sides of the test tube. A brown ring formed at the interface of the two layers. The appearance of a deep red color indicated the presence of triterpenoids, while a green color in the upper layer signaled the presence of steroids. Salkowski Test:** The crude extract was mixed with a small amount of concentrated sulfuric acid (H_2SO_4) and chloroform, and then shaken thoroughly. After allowing the mixture to stand, the presence of triterpenoids was indicated by the formation of a yellow-colored layer, while a red coloration in the lower layer suggested the presence of steroids.[27-37]

S. No.	Plant extract	alkaloids	flavonoids	saponins	carbohydrates	steroids	glycosides	fixed oils	tannins & phenolic	Protein & amino acids	triterpenoids
1.	*Leaves*	+	+	-	-	-	-	-	+	-	+	
2.	*Root*	-	+	-	-	-	-	-	+	-	+	
3.	*Barc*	+	-	-	+	-	-	+	+	-	-	

Conclusion

Different plant sections were used to create the crude methanolic extracts for this investigation. Leaves produced lower yields (18.67%) compared to the root and bark, which yielded the highest (28.42%). To determine the active ingredients in each extract, various chemical assays were used to evaluate the distinct extracts of all plants chemically . Upon investigation, the methanolic extract of leaves was shown to include triterpenoids, alkaloids, flavonoids, tannins, and phenolic compounds. The methanolic extract of other leaves contained alkaloids, flavonoids, and tannins, while the methanolic extract of leaves album (seeds) included alkaloids, saponins, glycosides, fixed oils, and tannins . These observations revealed the presence of tannins, flavonoids, and alkaloids across the different extracts.

REFERENCES

1. Ansari, R &Balakrishnan, N. P. 1994 The family Eriocaulaceae in India, BishenSingh Mahendra Pal Singh, Dehradun.

2. Ansari, R &Balakrishnan, N. P. 2009 Revised by R. Ansari The family Eriocaulaceae in India, Bishen Singh Mahendra Pal Singh, Dehradun.
3. 3. Brown, R. 1810 Prodromus Florae Novae Hollandiae et insulae van- Diemen.- Facsimile edition: Weinhelm 1960.
4. sunil c. n. & v. v. naveen kumar 2015 a new species of eriocaulon (eriocaulaceae) from western ghats, india journal of plant taxonomy and geography 70:20, 211-215.
5. sunil c. n., m. k. ratheesh narayanan, m. k. nandakumar, sujata k. a., jayesh p. joseph and n. anil kumar 2013 eriocaulon kannurense (eriocaulaceae) a new species from kerala, india. international journal of plant , animal and environmental science vol. 3(2)116-120.
6. Sunil C.N. & V.V. Naveen Kumar 2015 A new species of Eriocaulon (Eriocaulaceae) from Western Ghats, India Webbia Vol. 70 (2) 211-215. 7. Dalzell, N. A 1851. Eriocaulonrivulare.- Hooker's J. Bot. kew Gard. Misc.3:280
7. Ahmad AA and Khattak GM. 1980. Hastening seed germination of Paullinia pinnatainn. Pakistan Journal of Forestry. 30(3): 134-136.
8. Babeley GS and Kandya AK. 1988. On finding out some suitable pretreatments for Paullinia pinnatainn. seeds. Journal of Tropical Forestry. 4(2): 147-154.
9. Barthakur NN, Arnold NP and Alli I. 1995. The Indian laburnum (Paullinia pinnata.) fruit: an analysis of its chemical constituents. Plant Foods for Human Nutrition. 47(1): 55-62.
10.Bhatta UK and Bhatnagar S. 1986. Extent of damage to seeds of Paullinia pinnatainn. bya lepidopteran Trachylepidia fructicassiella Rag in relation to host density. Indian Journal of Ecology. 13(1): 22-24.
11. Fagbayide JA and Fawusi MOA. 1994. Comparative studies in seed germination and seedling management in Cassia fistula (L) and Cassia nodosa (Buch-Ham ex. Roxb). Indian Journal of Agricultural Research. 28(2): 133-140.
12. Girach RD, Aminuddin and Khan SA. 1993. Ethnobotanical studies on Paullinia pinnata. from Orissa (India). Journal of Research and Education in Indian Medicine. 12(3): 17-22.
13. Hartwell JL. 1967-1971. Plants used against cancer. A survey. Lloydia. 30-34.
14. Hong TD, Linington S, Ellis RH. 1996. Seed storage behaviour: a compendium.
15. Handbooks for Genebanks: No. 4. IPGRI. Luna R K. 1997. Plantation trees.
16. International Book Distributors. Misra TN, Singh RS, Pandey HS and Pandey RP. 1996. Chemical constituents of hexane fraction of Cassia fistula pods. Fitoterapia. 67(2): 173-174.
17. Perry LM. 1980. Medicinal plants of East and South East Asia: attributed properties and uses. MIT Press. South East Asia.
18.Vaishnav MM and Gupta KR. 1996. Rhamnetin 3-O-gentiobioside from Cassia fistula roots. Fitoterapia. 67(1): 78-79.
19. Vaishnava MM, Tripathi AK and Gupta KR. 1993. Constituents of Cassia fistula roots. Fitoterapia.
20. Sofowora A (1993). Medicinal Plant and Traditional Medicine in Africa; 9a) Spectrum Books Limited, Ibadan. pp 1-12,101-108. Trease, Evans WC (1997). Textbook of Pharmacognosy, 14th edition page 50: 150. 9b) Tsakala O, Pen RS, Miemanang K, Krohn H, Hussain, Dongo E (2006).

Paullinoside A and Paullinomide A: A New Cerebroside and a New Ceramide from the leaves of Paullinia pinnata. Z. Naturfosch. 61b: 1123-1127.
21. Watson L, Dallwitz MJ (2007). "Sapindaceae Juss.". The families of flowering plants: descriptions, illustrations, identification and information retrieval. http://delta-intkey.com/angio/www/ sapindac.htm. Retrieved 2007-08-27.
22. Zamble A, Carpentier M, Kandoussi A, Sahpaz S, Petrault O, Ouk T, Hennuyer N, Fruchart JC, Staels B, Bordet R, Duriez P, Bailleul F, Martin-Nizard FJ (2006). Cardiovasc Pharmacol Laboratoire de Pharmacognosie, Faculté de Pharmacie, Université de Lille 2, Lille, France. April.
23. Patil D.D., Mhaske D.K., and **Wadhawa G.C.** Anti-oxidant effect of stem and leaves of *Hibiscus Esculantus linn* , International Journal of Pharma Research,2(14):2234-2238, 201
24. Patil D.D., Mhaske D.K., and **Wadhawa G.C.** Anti diabetic activity of bark and root of *Cesalpinia Bondue*, International Journal of Pharma Research,2(10):2750-2752, 2011.
25. Patil D.D., Mhaske D.K., **Wadhawa G.C.** and Deshmukh A.K.**.** One pot synthesis of nitrile from aldehyde and hydroxylamine hydrochloride using ferrous sulphate in DMF under reflux condition, Asian journal of chemistry, 24 (3), 1401-1402, 2011.
26. Patil D.D., Mhaske D.K., **Wadhawa G.C.** and Deshmukh A.K.,and **Wadhawa G.C.** Antioxidant effect of stem and leaves of *Erythrina Indica Lam.* Online, International journal of pharmacy and pharmaceutical sciences,2012 .3(5) :116-119.
27. Patil D.D., Mhaske D.K., **Wadhawa G.C.** and Deshmukh A.K.,and **Wadhawa G.C.**Antibacterial.antioxidant,antiinflametry study of leaves and bark of *Cassia Fistula* , Intentional Journal of Pharma sciences,2012,2(1): 401-405 .
28. PatilD.D.,Mhaske,D.K.,Patare,M.A.,Deshmukh,A.K.,**Wadhawa,G.C.2013,**Mild efficient synthesis of benzimidazole, Bio Nano Frontiers Special issue 2013-14 volume 1.
29. PatilD.D.,Mhaske,D.K.,Patare,M.A.,Deshmukh,A.K.,**Wadhawa,G.C.** Bentonite clay in green synthesis, Bio Nano Frontiers Special issue 2013-14 volume 1.
30. PatilD.D.,Mhaske,D.K.,Patare,M.A.,Deshmukh,A.K.,**Wadhawa,G.C.** Bentonite clay in green synthesis, Bio Nano Frontiers Special issue 2013-14 volume 1.
31. PatilD.D.,Mhaske,D.K.,Patare,M.A.,Deshmukh,A.K.,**Wadhawa,G.C.,**Antioxidant effect of leaves of *Arbrous Precarious*, Bio Nano Frontiers Special issue 2013-14 volume 1.
32. Patil D.D., Mhaske D.K., Patare M.A.,Deshmukh A.K., and **Wadhawa G.C.** Antioxidant effect of stem and leaves of *Peeper Longum* Indian Journal of Pharmacy : 4(2), 2014, 73-75 .
33. PatilD.D.,Mhaske,D.K.,Patare,M.A.,Deshmukh,A.K.,**Wadhawa,G.C.** Antibacterial antioxidant study of leaves of *Phyllanthus Amrus* Flora and Fauna :3(4) 2014 56-60.
34. Patil D.D.,Mhaske D.K.,Patare M.A.,Deshmukh A.K., and **Wadhawa G.C.** Antibacterial antioxidant antiinflametry study of stem and leaves *Solonanum Xanthocarpum*, *International Journal of Pharmaceutical Sciences and Research*: 01 (03) 2014..59-63
35. PatilD.D.,Mhaske,D.K.,Patare,M.A.,Deshmukh,A.K.,**Wadhawa,G.C.** Antibacterial antioxidant study of leaves bark and root of *Phyllanthus Amrus* Flora and Fauna :3(4) 2014.56-60. **IF**

36. **Wadhawa G.C., Shivankar V.S., Patil S.S., Gaikwad Y.A.,** Sawant D.A., ManeV.A., and **Gavali L.V.** 2016, *Solanum Melongena Linn* as Effective Antioxidant Bionano Frontiers Special issue 2016-17 volume 7(Accepted).

37.Wadhawa G.C., Shivankar V.S., Patil S.S., Gaikwad Y.A., Sawant D.A., ManeV.A., and **Gavali L.V.** 2016 synthesis of 2-substituted benzimidazoles and 1,5-disubstituted benzodiazepines using alum Rasyan Journal of chemistry Vol 36