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To study Herbal pergularia plant used in treatment of maleria

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ABSTRACT: The plant Pergularia daemia has been traditionally used as anthelmintic, laxative, antipyretic expectorant and Also used to treat infantile diarrhea and malarial intermittent fevers. It is widely distributed in the tropical and sub tropical Regions of the world. Various phytochemical including terpenoid, flavonoids, sterols and cardenolids have been isolated and Identified from the various parts of the plant (leaves, stems, shoots, roots, seeds and fruits). P. daemia widely used by various Tribal communities in Western Ghats of India for the treatment of variety of ailments, while predominantly the roots of the Plant have been used to treat liver disease and jaundice. The present review article aims towards medicinal properties, Chemical constituents and other important aspects of P. daemia.

Keywords: pergularia daemia, anti-malaria ,evaluation

I. INTRODUCTION:

The continuous synthetic research seems to be supplemented by the plant drug research. In its technical report, the World Health Organization seems to be advocating for the advancement of traditional medicine. Side effects, toxicity, and recurrence of symptoms after stopping use are the biggest drawbacks of the powerful synthetic drugs currently on the market. A thin, hispid, foul-smelling laticiferous twiner, Pergularia daemia (Forsk.) Chiov (Apocyanaceae) is found in the plains across hot regions of India. It is also referred to as utaran in Hindi, Dustapuchettu in Telugu, and Uttamarani in Sanskrit. Due to its many properties, P. daemia is said to have more magical uses than medical ones.

Promise for curing a variety of ailments. According to certain folklore, this herb is used as a laxative, antipyretic, expectorant, and to treat infantile diarrhea in addition to jaundice. The development of numerous ancient medical systems, such as Ayurveda, Unani, Siddha, and Tibetan, has been based on India's plant biodiversity (Citation Jadhav et al., 2003). Plasmodium falciparum (P. falciparum), Plasmodium vivax, Plasmodium malariae, and Plasmodium ovale are the four main species of Plasmodium that cause malaria, a parasitic disease. P. falciparum is still the most dangerous of these species.

These parasites are spread to humans by female Anopheles mosquitoes. Compared to other infectious diseases worldwide, malaria has a higher morbidity and fatality rate (World Malarial Report, 2005; Smith, 1978; WHO, 2000).The future development of a novel and potent antimalarial medication may depend on the effectiveness of this medicinal plant (UNESCO, 1998).

Throughout the hottest regions of India, the plains are home to the foetid-smelling lactioferous twinner (Asclepiadaeceae), which can reach elevations of 1,000 meters in the Himalayas [4]. Widely dispersed throughout the tropics and subtropics of the old world fromAfghanistan, India, Sri Lanka, and southern and tropical Africa via Arabia [5]. It includes 3 β-hydroxyfriedelan, oleanolic acid, β-sitosterol (leaves), α-amyrin, and coroglaucigenin, calotropin, corotoxigenin, protouscharin, and uscharidin (seeds).Plant-derived lupeol and its acetates, calacin, hentriacontane, β-amyrin, and betaine; sugar residues of the plant's cardiac glycoside hydrolysaters produced D-glucose, L-oleandrose, and D-sermentose [6], and calotropagenin was the most common glycon among all hazardous glycosides [7].The herb is cooling, astringent, anthelmintic, laxative, and antipyretic; it treats tridosha, asthma, kapha, and biliousness. According to Ayurveda, ulcers can help with eye problems, urine discharges, leucoderma, strangury, uterine ailments, inflammations, and parturition.

Natural antioxidants and their potential health benefits have received a lot of attention in recent years. Many kinds of lactiferous plants are employed as sources of herbal remedies, according to numerous ethnopharmacological surveys.India is home to a wealth of indigenous herbal resources. The country's diverse terrain and shifting agroclimatic conditions allow for the growth of around 20,000 medicinally valuable plants.

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Numerous antioxidants are produced by higher plants.Substances that have been shown to have a wide range of biological actions, including polyphenols.

In addition to being commonly consumed, the plant is used in traditional medicine to treat liver problems, diabetes, inflammation, malaria, and asthma.The plant's Cardenolides, alkaloids, flavonoids, saponins, triterpenes, and steroidal substances have all been studied in relation to phytochemical composition.

Leaf &Flowers

Arial Part

Additionally, antimalarial medications can be used alone or in combination. Quinine (Cinchona alkaloid), Amodiaquine (AQ), Piperaquine and Chloroquine, (CQ) 4-aminoquinolines, Primaquine (8-aminoquinolines), Pyrimethamine (Diaminopyrimidines), Sulfadoxine (Sulfonamides), Artesunate (ART) and Artemeter (Sesquiterpine lactones), Mefloquine (Quinoline-methanol), Lumefantrine and Halofantrine (Amino alcohols), Atorvaquone (Naphthoquinone), and Programed (Biquanides) are among those in the single category and their corresponding classes in parenthesis.ART + amodiaquine, ART + meflquine, Artemether + lumefantrine, ART + sulfadoxine/pyrimethamine, and other non-artemisinins like Sulfadoxine + Pyrimethamine and Sulfadoxine + Pyrimethamine + amodiaquine are examples of combination therapy.

Plasmodium parasites travel through the bloodstream after being bitten by female Anopheles mosquitoes, mature, and then procreate in the liver. Eventually, these parasites cause malaria symptoms as headache, fever, weakness, discomfort, nausea, abdominal trouble, and profuse perspiration.

This plant's latex is used to treat toothache 17. This plant's stem bark treats fever 13 and cold 18. Numerous pharmacological effects, including hepatoprotective, antifertility, anti-diabetic, analgesic, antipyretic, and anti-inflammatory properties, have been described for the plant's aerial portions 15.According to phytochemical analysis, the plant contains a variety of triterpenes and steroidal chemicals, as well as cardenolides, alkaloids, and saponins 16.

Cardenolides, alkaloids, flavonoids, saponins, triterpenes, and steroidal substances have all been studied phytochemically in the plant.14.

Plant Taxonomy: -Daemia Pergularia Linn. A thin, fetid-smelling, hispid perennial climber.Petioles are 2–9 cm long, the leaves are opposite, membranous, broadly ovate, orbicular or deeply cordate, acute or short-acuminate at the apex, and ubescent below. The leaves are 3–9 cm long and roughly as wide.Clusters of axillary, long-peduncled, drooping flowers that are greenish-yellow or dull white with a purple tint. The seeds are pubescent and broadly ovate, while the fruits (follicles) are lanceolate, long-pointed, and around 5 cm long. They are covered with soft spines.

VernaularNames:- P.daemia (Forsk) Chiv or P.extensa N.E.Br or Daemia extensa R.Br 19.
Bengali: Chagulbanti, Changulbati
Guajarati: Amaradudheli, Chamardudhel
Hindi: Utranajutuka, Utran, Dudhi, Dudhibel
Kannada : Haalu koratige, Hala koratige
Malayalam : Veliparatti, Veliparuti
Marathi : Utaranavel, Uturhi
Oriya : Juktiruhi, Uttruri, Uturdi
Sanskrit : Uttaravaruni, Kurutakah,Yugaphala,
Tami : Beliparti, Nandamani, Uthamani, Veliparuth

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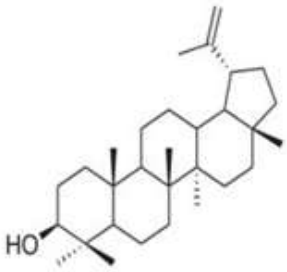
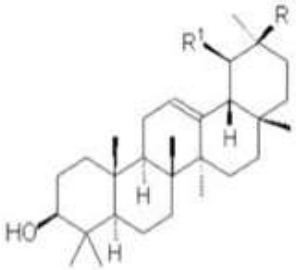
Fruit

Sheet of whole Plant

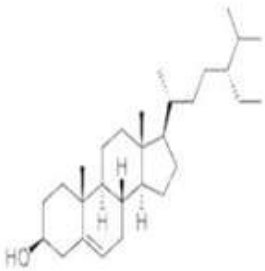
Taxonomy classification10
Kingdom : Plantae
Subkingdom : Tracheobionta
Super division: Spermatophyta
Division : Magnoliophyta
Class : Magnoliopsida Subclass : Asteridae
Order : Gentianales
Family : Asclepiadaceae
Genus : Pergularia
Species : P. daemia (Forsk)
Phytochemical profile 11-12 .



Lupeol



R = H, R^1 = CH_3 = α-amyrin
R = CH_3, R^1 = H = β-amyrin



β-sitosterol

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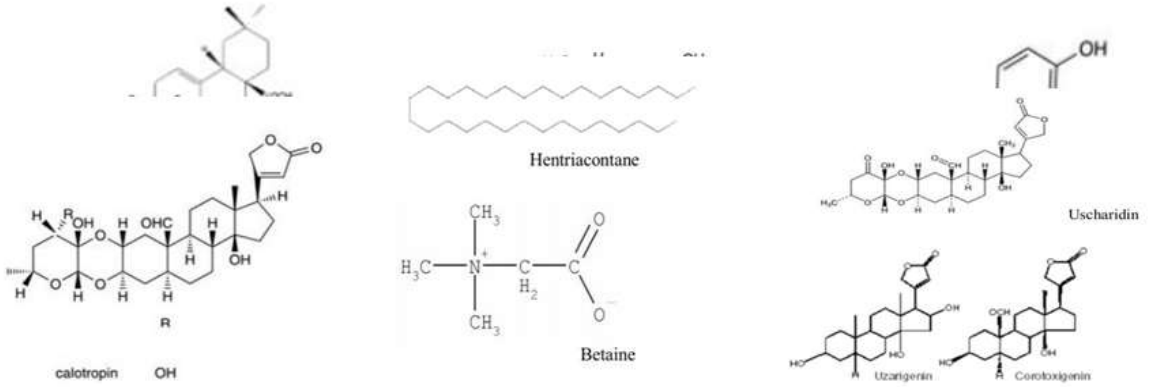

Material and methods.

Collection of plant material and preparation of crude extract.

The Fresh Pergularia daemia [Forsk] leaves were gathered in August 2013 from the vicinity of the railway station close to Yeola. Taxonomist Prof. S. E. Saindanshiv, H. O. D. Department of Botany, SSGM College of Arts, Commerce and Science, Kopargaon, identified and verified the leaves. The fresh leaves were gathered, dried, and chopped into smaller pieces as needed; the rest were ground into powder.

Preparation of plant extracts

The To create a coarse powder, the 1000 g of shade-dried P. daemia plant materials—root, stem, leaves, flower, and bark—were reduced in size. Petroleum ether was used to defatten the powdered plant material at 60 to 80 degrees Celsius. Ethyl acetate and methanol were then extracted using a Soxhlet apparatus for around 72 hours at 40 degrees Celsius. Whatman No. 1 was then used to filter the sediment.Filter paper (Maidstone, UK: Whatman Ltd.). A rotary vacuum evaporator (Buchi R-V120, Flawil, Switzerland) was used to further concentrate the ethyl acetate and methanolic extracts of P. daemia (PDEAE and PDME) under vacuum at 40 °C. They were then reconstituted in a minimum quantity of dimethyl sulfoxide (DMSO) and kept at 4 °C for further use.Ethyl acetate and methanolic extracts yielded percentage yields of 4.5% (w/w) and 8.1% (w/w), respectively.

Unlike traditional medications, medicinal plants are composed of a variety of chemical components. Furthermore, the section of the plant used, environment, growth conditions, harvesting, and storage conditions all affect the chemical composition of medicinal plants. According to a number of studies, certain medicinal herbs may change certain pharmacokinetic parameters of traditional antimalarial medications, either boosting or lowering their effectiveness 8.

Method .

Procurement of drug

4 kilogram of Pergularia daemia Linn. Entire plant. Were gathered in Nandurbar, Maharashtra's District of Nandurbar.

Drying & size reduction

The Pergularia daemia Linn. Plant, freshly harvested intact. Were shade-dried before being ground into the necessary particle size.

Extraction

Tin order to get approximately 1.5 kg of powder with the required particle size, the dried material was ground into a course powder using a mechanical grinder and passed through rough sieve No. 40. About 700 grams of powdered material were extracted in two batches using 50 cycles each using petroleum ether (60–800), benzene, chloroform, ethyl acetate, n-butanol, and ethanol. The extraction was carried out until the solvent in the thimble turned clear, signifying that it was finished. Following each extraction, the extract was concentrated at a low temperature (26), and the solvent was distilled out.

Preliminary phytochemical analysis.

Secondary components of plants. Alkaloids, terpenoids, saponins, phenolic chemicals, flavonoids, and tannins are some examples of secondary metabolites. Numerous biological or pharmacological activities are caused by these19–20.

Alkaloids, flavonoids, tannins, saponins, flavones, sterols, terpenes, cardiac glycosides, protein, carbs, and lipids have all been found using

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a variety of qualitative analyses that are detailed below21,22,23,24.

Test for flavonoids

In a test tube, the ethyl acetate and methanolic extract of plant leaves were mixed with a few drops of 1% NH3 solution. When flavonoid compounds are present, a yellow coloring is seen.

Test for tannins

In a test tube, 0.5 g of a powdered plant leaf sample was cooked in 20 ml of distilled water before being filtered. Here, a conical flask and filter paper were employed as part of the standard filtration procedure. After adding 0.1% FeCl3 to the filtered samples, the presence of tannins was determined by looking for a brownish green or blue-black hue.

Test for carbohydrates

Benedict's reagent (5 ml) was added to 0.5 ml of powdered extract sample and heated for 5 minutes. After a few more minutes of boiling, the formation of a bluish green tint indicated the presence of a carbohydrate solution. The color become dirty brown or reddish pink when flavonoids were present.

Test for alkaloids

2 ml of HCl was mixed with 5 ml of the extract. One milliliter of Dragendroff's reagent was added to this acidic medium. The presence of alkaloids is instantly indicated by the production of an orange or crimson precipitate.

Test for steroid

A 1 ml of extract was dissolved in 10 ml of chloroform and equal volume of concentrated H2 SO4 was added by sides of the test tube. The upper layer turns red and sulfuric acid layer showed yellow with green fluorescence. This indicated the presence of steroids.

Test for proteins

Five to six drops of Millon's reagent were applied to a tiny volume of methanolic and ethyl acetate extract. The presence of proteins is shown by the formation of a white precipitate that turns red when heated.

Test for terpenoids

In a test tube, 5 ml of methanolic and ethyl acetate extract and 2 ml of CHCl3 were combined. Carefully, 3 ml of concentrated H2 SO4 was added to the mixture to create a layer. If there are terpenoids present, an interface with a reddish brown hue forms.

REFERENCE:

[1]. Vaithiyanathan V, Mirunalini S. Chemo preventive potential of fruit juice of Phyllanthus emblica Linn.(amla) against mammary cancer by altering oxidant/antioxidantstatus, lipid profile levels and estrogen/progesterone receptor statusin female Sprague–Dawley rats. Biomed Prev Nutr. 2013;3:357–66. [Google Scholar]

[2]. Bashkir VH, Balakrishnan N. Pharmacognostic studies on Pergularia daemia roots. Pharm Biol. 2010;48:427–32. Doi: 10.3109/13880200903160699. [DOI] [PubMed] [Google Scholar]

[3]. Sureshkumar SV, Mishra SH. Hepatoprotective effect of extracts from Pergularia daemia Forsk. J Ethnopharmacol. 2006;107:164–8. Doi: 10.1016/j.jep.2006.02.019. [DOI] [PubMed] [Google Scholar].

[4]. Pan W, Xu X, Shi N, Tsang SW, Zhang H. Antimalarial activity of plant metabolites. Int J Mol Sci. 2018;19:1382.

[5]. Erhirhie EO. A thorough analysis of antimalarial treatments and infertility. 107–11 in Toxicol Int. 2016;23(2).

[6]. Okello D, Kang Y. Exploring Antimalarial Herbal Plants across Communities in Uganda Based on Electronic Data Evid Based Complement Alternat Med. Volume 2019, Article ID 3057180, 27 pages.

[7]. Vaithiyanathan, S. Mirunalini

[8]. Chemo preventive potential of fruit juice of Phyllanthus emblica Linn. (amla) against mammary cancer by altering oxidant/antioxidant status, lipid profile levels and estrogen/progesterone receptor status in female Sprague-Dawley rats

[9]. Eseyin O, Ebong A, Ubobre A, Ekarika J, Udo I. Changes in some pharmacokinetics paraeters of chloroquine by Gnetum africana. Maced J Med Sci. 2012a:1857–5773.

[10]. Nadkarni AK. Indian Materia Medica. Bombay: Popular Prakashan Pvt Ltd; 1976. P.430.

[11]. Pushpangadan P, Atal CK. Ethno-medico-botanical investigations in Kerala I. Someprimitive tribals of Western Ghats

and their herbal medicine. J Ethnopharmacol 1984; 11 (1): 59-77.
[12]. R. Nithyatharani., Phytochemical Studies on the Leaves of Pergularia Daemia Collected from Villupuram .Journal Of Pharmacy, Volume 8, Issue 1 Version. 1 (January 2018), PP. 09-13.
[13]. Rastogi, P.M., Mehrotra, B.N., Sharma, In., Compendium of Indian Medicinal Plant Vol.2, CDRI, New Delhi, 1999, 124-126.
[14]. Patil, M. B., Jalalpure, S. S,. Pramod, H. J.: Ind J Pharma Sci. 2003,65(1): 70-72 .
[15]. Gupta JC, Roy PK, Dutta A. Pharmacological action of an active-constituent isolated from Daemia extensa linn. (Syn. Pergularia extensa) Indian J Med Res. 1946;34:181–4. [PubMed] [Google Scholar]
[16]. http://plants.usda.gov
[17]. Selvanayagam ZE, Gnavavendhan SG, BalakrishnaK, Rao RB, Ali SU. Survey of medicinal plants with antisnakevenom activity in Chengalpattu district,Tamilnadu, India. Fitoterapia 1995; 66 (6.488494).
[18]. Singh, S., Majumdar, D. K., In; Singh, J. V., Govil, J. V.,Rec Prog Med Plant, phytochem and pharmacol,,2003, 2:2-3 .
[19]. Tatiya, A.U., Hatappaki, B.C.: Ind J Pharm Sci ,2003, 65 (5):532-534
[20]. Karthishwaran K, Mirunalini S. GC-MS analysis of aerial parts of pergularia daemia (Forsk.) methanolic extract. E J Life Sci. 2012;2:50–5. [Google Scholar]
[21]. Rungsung W, Ratha KK, Dutta S, Dixit AK, Hazra J. Secondary metabolites of plants in drugs discovery. World J Pharm Res. 2015;4:604–13. [Google Scholar]
[22]. Sofowora A. The present status of knowledge of the plants used in traditional medicine in western Africa: A medical approach and a chemical evaluation. J Ethnopharmacol. 1980;2:109–18. [PubMed] [Google Scholar]
[23]. Pandey A, Tripathi S. Concept of standardization, extraction, and pre-phytochemical screening strategies for herbal drug. J Pharmacogn Phytochem. 2014;2:115–9. [Google Scholar]
[24]. Beena P, Rajesh KJ, Arul B. Preliminary phytochemical screening of Cicer arietinum in folklore medicine for hepatoprotection. J Innov Pharm Biol Sci. 2016;3:153–9. [Google Scholar]
[25]. Trease GE, Evans WC. Textbook of pharmacognosy. 13th ed. London, UK; Toronto, Canada; Tokyo, Japan: Bailiere Tindall; 1989. Pp. 200–1. [Google Scholar]