JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

A REVIEW ON WILD HERB : PHYLA NODIFLORA

Anchal sharma, Dr. Naresh Singh gill, Seema Sharma, Ankita

Department of Pharmaceutical Chemistry

Rayat institute of pharmacy, railmajra, district SBS nagar

Abstract

Phyla nodiflora is perennial herb low-growing native ,evergreen groundcover makes an excellent lawn substitute ,also known as jalpapli . it is tolerant of wetness , dryness , compact soils , salt wind ,and occasional salt flooding . it has been used medicinally for several causes as a antifungal , antimicrobial , larvicidal , anti tumour , in swollen cervical glands , gonorrhea and pain in joints . this plant also showed the anti bacterial activity such as staphylococcus , E.coli, etc. in this review article mainly concentrated on its pharmacological , phytochemistry , anti bacterial , anti microbial activity.

Keywords

Pharmacological ,phyla nodiflora ,streoids, phytochemicals, verbenaceae .

Introduction

Medicinal plants are an important unit of the whole world. Various medicinal plants have been used from many decades for treatment of many diseases. Especially people living in villages and also people living in hilly areas . hilly areas are the most common source of medicinal plants ,herbs ,trees. Medicinal plants have been offering in the development of Indian system of medicine. india with its mega – biodiversity and rich in knowledge of traditional medicine .i.e ayurveda provide a powerful base for utilization of more no. of plants in general healthcare and alleviation of diseases .there are several drugs used in ayurveda but little-known to primary stakeholders .one of these known drugs called as jala pippali.

Jalapippali is also known as phyla nodiflora , local name is jalpapli , English name is frog fruit .it is found in warmer part of india, sri lanka, central America etc. in india it is present in kerala, Maharashtra, Karnataka, u.p, tamil nadu , rajasthan , etc . it belongs to family verbenacea.

Family : Verbenaceae

Name : phyla nodiflora, lippia nodiflora , phyla nodiflora var. incisa, lippia nodiflora var .reptans.

Synonyms : nodiflora, lippia reptans ,phyla nodiflora var. nodiflora, phyla nodiflora var. rosea. Texas frog- fruit , matchweed, creeping lip.

Common : plant , spatulate- leaved frog- fruit

Name : frog fruit , wedge- leaf , turkey-tangle , capeweed, matgrass

Classification and characteristics

Plant division : angiosperms [dicotyledon] ,

Plant growth form : creeper ,herbaceous plant perennial .

Plant shape : shrubby .

Maximum height : 0.1 m to 0.3 m

Biogeography

Native distribution : USA

Native habitat :terrestrial .

Preferred climate : temperate

Local conservation status : non- native .

Description and Ethnobotany

Growth form : a perennial herb with spreading growth form , growing to about 15^{cm} tall .

Foliage : leaves green , ovate or oblanceolate, with serrate leaf margin from the middle to the tip of the leaf . leaves have opposite arrangement .

Stems : the stem can be up 0.9 m long .it becomes woody at the base as it matures .the stem is strongly yellow-green , but reddish brown near the tip and leaf nodes .

Flowers : a ring of small ,white to pink ,bi-labiate flowers [having 2 lips , 3mm wide] surround a purple ovoid flowering head [1-3 cm long] near the top. The inflorescence occurs on a green to

red- brown floral stalk .

Fruits : produces capsules that break up into nutlets which are small ,indehiscent , dry fruits.

Habitat : occurs in wet lands , wet prairies and near rivers at altitudes of 0- 400 m . also becomes established in disturbed areas with moist soils [ponds , fields , ditches , paddy , brackish water] .

Cultivation :although this plant prefers moist soil , a mature plant can withstand short periods of drought . able to grow in poorly drained or nutrient poor soils , but not saline soils . however , it

can tolerate salt spray .

Etymology :the genus name “phyla” is Greek for calm or tribe . it refers to how species in this genus often have many flowers that occur in tight clusters . the species epithet “nodiflora “is latin for a term that means that flowers emerge from nodes . the common name “matchweed”come from the fact that the floral stalk and infloresence together resemble a match .

Ethnobotanical uses: food [herb and spice]

Medicinal [traditionally , the plant has been used to treat constipation and knee pain . leaves and immature stalks are used to make infusions that are administered to children with indigestion or women that have recently delivered a baby . a paste produced from the plant is also applied to boils and ulcers . freshly pressed juice from leaves is used on gums to stop bleeding].

[others ; leaves can fed to cattle].

Landscaping features

Landscaping : excellent ground that can withstand both drought and flooding . however , care must be taken to restrain its growth , because it can overtake lawns and gardens due to its fast growth rate. Also good for hanging baskets .may be planted next to water gardens .

Desirable plant features : ornamental flowers .

Plants and rootzone : easy to grow , waterlogged soils .

Landscape uses : general , turf /lawn/ spots field, groundcover, container plants , hanging basket .

Fauna dispersal, pollution and

Fauna pollution : butterfly food plant .

Pollution methods : biotic [fauna] [insects] [butterfly] [moth].

Plant care and propagation

Light preference : semi- shade , full sun .

Water preference :lots of water , moderate water.

Plant growth rate : fast .

Maintenance requirements : moderate .

Propagation methods : stem cutting .

Foliar

Foliage retention : evergreen

Mature foliage colour : green

Mature foliage texture : smooth.

Foliar type : simple / unifoliate

Foliar arrangement along stem : opposite

Foliar shape : non plam foliage

Foliar venation : pinnate / net .

Foliar margin : seerate / toothed

Foliar apex- tip : rounded

Foliar base : cuneate

Typical foliar area : microphyll [2.25cm -20. 25 cm2]

Non – foliar and storage

Stem type and modification : herbaceous

Root type : underground . [tap root].

fruits, seed and spore

Fruit classification : simple fruit

Fruit type 1 : dehiscent dry fruit

Fruit type 2 : capsule

Phytochemistry

The plant is full of highly medicinal used components . the plant have a different type of constituents such as fructose, glucose , lactose, linoleic , phenols, triterpenoids ,phenols, steroids, xylose. In leaves contains nodiflorines-Aand B , NEPETIN, LIPPIFLORIN-A, nodifloretin , glycosides of beta- sterol and stigma – sterol. From the flowers of phlya nodiflora, two flavons glycoside*s lippiflorin B along with the known compound nepatin and batalifolin from the ethanol extract of phyla nodiflora were isolated.

Volatile constituents

The extracts of phyla nodiflora were were steam - distilled . a mixture of hydrocarbons and a mixture of oxygenates in the hydrocarbon fraction , among the 14 constituents the main constituent was beta- caryophyllene, 12 constituents were found to be in less than 7% while 5 compounds [1-octane-3-ol, phenethyl alcohol].and oxygenated fraction to be in amounts less than 7%, p-cymen -8-ol ,and methyl salicylate] were found to be in amounts between 10 -20 percent of total.

Actions : diuretic, demulcent , astringent ,febrifuge, cooling , heart tonic , spermopoietic, blood purifier, appetizer, stomachic , anthelmintic , ophthalmic.

Used in : whole plant : is febrifuge , spermopoietic :plant made in to poultice used as maturant for boils , infusion of tender leaves and stalks : given to children , indigestion, and dirrhoea , ordinary cold and given to women after delivery in fever , also useful in polyuria dysentery , arthritis.

Pharmacological uses

1. Anti- diuretic activity : the diuretic activity of methanol and with water extract of whole plants were assessed in albino rats using in-vivo Lipschitz test modal . furosemide was used as a standard. the volumes of urine , urinary concentration of Na and k ions were the parameters of the study. The results indicates that methanol and water extract at 500mg/ kg body weight shows a significant increase in urine volume and electrolyte excretion when compared to control . both the extracts show significant diuretic activity.

2. Anti-microbial activity : phyla nodiflora activity was also be calculated the antibacterial , anti microbial and phytochemical studies were also done. The Indian medicinal plants were studied for their anti-microbial activity.

3. Larvicidal activity: phyla nodiflora , lippia nodiflora , lippia gracilis , lippia microphylla of leaves essential oil used to studied the larvicidal activity against the instar larvae of aedes aegypti. Only in leaves essential oil larvicidal effect showed . larvicidal activity is 26.3 mg/ml.

4. Skin problems : phyla nodiflora is traditional medicine for the treatment of different dermo problems and used as folk cosmetics among the tribal communities of west-north frontier province , Pakistan .

5. Anti -cancer activity :the phyla nodiflora has been evaluated from methanolic extract for the anti – cancer activity by using swiss albino mice .the mice weight is 400mg/ kg by administrated methanol extract at 200 for 9 days after 24 hours of cancer inoculation . the methanolic extract indicated significant decreases in cancer volume, viable cell count and packed cell volume, the life spam of mice was also found to be increased . for the mice treated with the methanol extract the hematological profiles reverted to more/ less normal

levels, while the serum enzymes, total proteins and bilirubin were altered narrowly. The methanol extract increased the level of reduced glutathione , catalase and superoxide dismutase and reduced the levels of lipoid per oxidation. The plants was found to bear good anti cancer activity , which was supposed to be due to be increased anti oxidant activity.

6. Miscellaneous activity : phylanodiflora contains nodifloretin, beta- sitosterol glucoside, stigmasterol , nodifloridin A, etc, it could be used in proper doses for the treatment of hepatitis. Zheng etal suggested that the plants extract of any of two plants L.nodiflora, datura metel, wrightia tinctoria possess anti dandruff application.

   A pilot study was done on simple siddha remedy for alopecia area.

   The anti- inflammatory and anti- pyretic activity in rodents of plants extract was used in African medicine.

Conclusion

Phyla nodiflora is worldwide all over the world . its has been used by the unlikely people as traditional medicinal . different compounds has been isolated . presence of large number of pythochemicals indicates towards its future persepective to use it as an indigenous medicine in the pharmaceutical industry. certain compound has been islated. However more investigations are to be done on the biological active compounds.

References

Al-Snafi AE, Talab TA and Majid WJ. Medicinal plants with central nervous activity - An overview (Part 1). IOSR Journal of pharmacy 2019, 9(3): 52-10

2. Al-Snafi AE. Beneficial medicinal plants in digestive system disorders (part 2): plant based review. IOSR Journal of Pharmacy 2016; 6(7): 85-92.
3.Al-Snafi AE. Arabian medicinal plants possessed gastroprotective effects- plant based review (part 1). IOSR Journal of Pharmacy 2018; 8(7): 77-95.
4.Al-Snafi AE. Arabian medicinal plants for the treatment of intestinal disorders- plant based review (part IOSR Journal of Pharmacy 2018; 8(6): 53-66.
5. Al-Snafi AE, Majid WJ and Talab TA. Medicinal plants with antidiabetic effects - An overview (part 1). IOSR Journal of pharmacy 2019, 9(3): 9-46.
6. Al-Snafi AE. Antimicrobial effects of medicinal plants (part 3): plant based review. IOSR Journal of Pharmacy 2016; 6(10): 67-92.
7. Pharmacological and therapeutic effects of Lippia nodiflora (Phyla nodiflora)
Shukla S, Saluja AK and Pandya SS. In-vitro antioxidant activity of aerial parts of Lippia nodiflora Rich. Pharmacologyonline 2009; 2: 450-459.

Teoh PL, Mohd Ali R and Cheong BE. Potential anticancer effect of Phyla nodiflora extracts in breastcancer cell line, MCF7. World Journal of Pharmacy and 2(6): 6053-6061. Pharmaceutical Sciences 2013;
Balamurugan R and Ignacimuthu S. Antidiabetic and hypolipidemic effect of methanol extract of Lippia nodiflora L. in streptozotocin induced diabetic rats. Asian Pac J Trop Biomed 2011; S30-S36.
10. Jenson M. 'From the best to the worst', The Border News, 29 April 2002, p. 1.0.
11. Mann J. The occurrence of phyla weed (Phyla nodiflora) on the Condamine River, Queensland Lands Department Survey, Alan Fletcher Research Station, Brisbane. 1960.
12. Batianoff, GN & Butler, DW Assessment of invasive naturalised plants in southeast Queensland Plant Protection Quarterly, vol. 17, 2002 , pp. 27–34
13. Barua AK,Chakrabarti P, Sanyal PKStructure of nodifloretin, new flavone from Lippia nodiflora.Transactions of the Bose Research Institute (Calcutta), 33-34(3), . 1971, 5-8.
14. Joshi BC. Chemical examination of Lippia nodiflora Vijnana Parishad Anusandhan Patrika, 11(4) 1970. 214-219.

15. Nair AGR, Ramesh P, Nagarjan S and Subraimanam S. A new flavones glycosides from Lippia nodiflora. Indian journal chem., 2, 1973. 1316-1317.
16. Barnabas C, Gunasingh G, and Nagarajan S, Flavonoids from the flowers of Phyla nodiflora Linn. Indian Journal of Chemistry, Section B: Organic Chemistry including Medicinal Chemistry, 19B(9), 1980, 822.
17. Khalil AT, Lahloub MF and Salama OM. Phenolic compounds from Lippia nodiflora. Journal of Pharmaceutical Sciences, 11(2),1995: 256-265
18. Tomas-Barberan FA, Harborne JB and Self R. Twelve 6- oxygenated flavone sulphates from Lippia nodiflora and L.canescens, Phytochemistry, 26(8), 1987, 2281-2284.
19. Ravikanth V,Ramesh P, Diwan PV and Venkateswarlu Y. Halleridone and Hallerone from Phyla nodiflora as taxonomic markers. Biochemical Systematic and Ecology, 28(9), 2000 .905-906.
20. Siddiqi BS, Ahmed F, Sattar FA, Begum S. Chemical constituents from the aerial part of L.nodiflora linn. Arch pharma res ,30(12) ,2007,1507-1510
21. Kaur A and Shukla J V. Chromatographic methods of fractionating several chemical constituents in Phyla nodiflora. International Journal of Pharmaceutical Sciences and Research 1(1), 2010, 46-55. 22. Balakrishnan G, Janakarajan L, Balakrishnan A and Lakshmi BS. Molecular basis of the anti-inflammatory property exhibited by cyclo-pentano phenanthrenol isolated from Lippia nodiflora., Archives of Pharmacy Practice, 39(7), 2011. 71
23. Rangachari Balamurupan, Veeramuther Duraipandiya, Savarimuthu IG, Macimuthu. Anti diabetic activity of YSitosterol isolated from Lippia Nodiflora L. in streptozotocin induced diabetic rats." European journal of pharmacology. 667 (1-3) Sept., 2011, 410-418.
24. Kumaresan P, Thirupathy, Shish Tulshkas and C. Vijay , Neuropharmacological activity of Lippia nodiflora Linn. Pharmacognosy research July-Sept. 3(3) ,(2011) ,194-200
25. Zheng L. Application of Lippia nodiflora extract to preparing medicinal preparation for treating hepatitis. China patent, 2(3), 2008, 101-105.
26. Narayanan NME, Ranganathan CKH, Narayanan M and Rao GV. A process for manufacturing synergistic antimicrobial compositions for dandruff treatment. India patent application IN 2002-.MA 628, 2008, 101-105.
27. Forestieri AM, Monforte MT, Ragusa S, Trovato A, Jauk L. Anti inflammatory analgesic and anti pyretic activity in rodents of plant extracts used in African medicine. Phytotherapy research 10(2), 1996, 100-106.
28. Panniachary G, Rajalakshmi S, Saroja P R, Sundaram M, Veluchamy G A.Simple Siddha remedy for hizhuvettu(alopecia area) a pilot study, J of res. in ayurveda and siddha, 10(1-2), 1989.
29. Malathi R, Cholarajan A, Karpagam K, Jaya KR, and Muthukumaran P Antimicrobial studies on selected medicinal plant Coleus amboinious, Phyla nodiflora and Vitex negundo. Asian J. Pharma tech. I (2), 2011 ,53-55
30. Ravikumar VR and Sudha T, Phytochemical and microbiological observations on Phyla nodiflora. Int. J. of Res. in pharmacy and chemistry 1(2) ISSN 2231- 2781, 2011, 117-120 29. Bhakuni DS, Dhar ML, Dhar MM, Dhawan BN. and Mehlotra BN. "Screening of Indian plants for biological activity. Part II. Indian J. of exp. bio. 1969, 7.250.
31. Durairaj A K, Vaiyapuri TS ,Mazumder UK, Gupta M,.Antimicrobial and lipidperoxide scavenging activity of lippia nodiflora (verbenaceae) Pharmacologyonline 3, 2007, 177-189.
31. Salve S D and Bhuktar A S. Pharmacognostic study of Phyla nodiflora linn. International journal of pharmacy,3(3), 2012, 255-260
32. Gopal RH,Balakrishna K, Vasanth S, Bhima Rao B. Activity of Lippia nodiflora essential oils on bacteria. sem in res. in ayurveda and siddha. New Delhi CCRAS, 1995 .
33. Patel Janki B, Shah Kinjal H, Patel Rashmika C. Evaluation of anti bacterial activity of methanolic extract of seeds of Phyla nodiflora Linn. Int. research journal of pharmacy 2(6), 2011, 91-93.
34. Pirzada AJ, Iqbal P, Shaikh W, Kazi T G and Ghani KV. Studies on elemental composition and antifungal activity of medicinal plant L. nodiflora against skin fungi. Journal of Pak. Assoc. derma, 15(2), 2005 , 113-118
35. Linde JH,Cambrinck E,Regnie TJC, Virijevic RS . Chem comp and antifungal activity of the essential oils of L.rehmanii from south Africa. S Africa j bot, 76(1), 2010, 37-42.
36. Pascual ME, Slowing K, Carreto E, Sanchez mata D, Villar A, Lippia:traditional uses,chemistry and pharmacology - a review. Jour of Ethnopharmacology,76(3), 2001, 201-214 37. Zheng L. Application of Lippia nodiflora extract to preparing medicinal preparation for treating hepatitis.China patent, 2(3), 2008, 101-105.
37. Malik HMA. Treatment through Herbs in: Medicinal Plants of Pakistan, (Eds.): R. Anwar, N. Haq, And S. Masood. 2001 pp. 21-23
38.Qureshi, R. Floristic and ethnobotanical study of DesertNara Region, sindh. Shah Abdul Latif University, Pakistan Research Repository ,2004, pp. 45
39. Sudershan C. Shoot brid regeneration from leaf explants of a medicinal plant. Enicosternma Oxillare. Current science 74, 1998, 1099-1100.
40. Richardson R. Lippia (Phyla nodiflora): its distribution and impact throughout the eastern mainland states of Australia, a post graduate report, Faculty of Applied Science, The University of Queensland, Gatton College, Lawes, 1994.
41. Lucy M, Powell E, McCosker R, Inglis G & Richardson R . Lippia (Phyla canescens): A review of its economic and environmental impact on floodplain ecosystems in the Murray–Darling Basin, Department of Primary Industries.