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Review On Pharmacognosy And Pharmacology Of Mansoa Alliacea.

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Abstract:

Mansoaalliacea species, a well-known home-grown herb in India, that belong to the genus Mansoa of the Bignoniaceae family. The M. alliacea, stems, Bark, flowers and leaves are employed in herbal therapy, and also used as herbal plant. Day by day important of this herbal medicinal plants are studied and used in Ayurvedic system as a Dravyas. Pharmacognostical, Pharmacological and therapeutic research, on the stems, barks, flowers and leaves of the M. alliaceaand its active components are presented in this overview.

The essential oils of Mansoaalliacea show the characteristic aroma and flavor. The chemical composition of the extracts of Mansoa has been described and it includes alkaloids, saponin, phenol, triterpenoids, flavonoids, lapachol derivatives and other such compounds. The uses, chemical composition, Pharmacogical activities of Mansoa species such as Depressant Activity, Anti-inflammatory Activity, Anticancer Activity, Antioxidant Activity, Anthelmintic activity, Antimalarial activity, Antifungal Activity, Antibacterial activity are presented,

Keywords- Mansoaalliacea, Bignoniaceae, Pharmacognosy, Pharmacology.

INTRODUCTION:

Mansoaalliacea is a native plant to South America, obtained from the Amazonian basin, belonging to the family of Bignoniaceae. It has been recollected in Bolivia, Brazil, Colombia, Costa Rica, several Caribbean Islands, Ecuador, and French Guiana. M. alliacea is well-known with several common names in different countries, such as follows, garlic creeper (India), garlic vine (USA), garlic shrub (England), Alho-da-mata (Brazil), bejuco de ajo (Venezuela), liana alall (France), ajo sacha (Peru). (Zoghbi MD, et al., 2009) false garlic, garlic rope, postal, sacha ajo, sucho ajo, shansqueboains, tingi-tite, woeipole. **(**Markam J, et al., 2018**).** The name ajo sacha has the characteristic garlic smell molecules

present in the leaves so, that's why called false garlic. Like many other plants cited in traditional medicine, M. alliacea plant has been investigated to identify new potential useful drugs or a source of bioactive compounds. Therefore, we aimed to compile an up-to-date and comprehensive review of M. alliacea studies that matches its traditional medicine uses, pharmacognosy, and pharmacology.(Salazar AT, et al.,2017)

The various derivatives of M. alliaceaproduce depressant, anti-inflammatory, anticancer, analgesic, cytotoxic, hypoglycemic, antiulcer, antifungal, antioxidant, antibacterial, antiviral, antiseptic, antitumor, and hypocholesterolemic activity, due to the presence of alkaloids, flavonoids, tannins and phenols, and quinones constituents.(Ameenabee SK, et al,2020; Pires FB, et al, 2016)M. alliacea is widely used in folk medicine for the treatments of cold, headache, arthritis, as an aid to fertility, commonly added to baths to treat feverish conditions, flu, body aches, fatigue,cramps, mosquito and snake repellent, epilepsy, various uterine disorders, etc.

Fig 01: Flower and Leaves of Mansoaalliacea

Vernacular names(Sreelakshmi KP and Ragunathan M. 2021)
English :GarlicVine, False garlic, Wild garlic
Marathi :Lasun Vel
Hindi :Lahan Bel
Malayalam :Veluthullichedi
Tamil :Vellullipachai
Manipuri :Chanameli
Bengali :Lataparul
Kannada :Bellulliballi

Taxonomical Classification(Sreelakshmi KP and Ragunathan M. 2021)

Kingdom	Plantae
Subkingdom	Viridiplantae
Division	Tracheophyta
Super division	Embryophyta
Order	Lamiales
Superorder	Asteranae
Family	Bignoniaceae
Genus	Mansoa
Species	Mansoaalliacea (Lam.)

Table 1: Taxonomical Classification of M. alliacea

Habitat

M. alliacea is an evergreen semi-woody climber that can be termed as a shrub it produces several woody vines from the root that raise only 2-3 tall in addition to form a shrub-like appearance. It is a popular ornamental plant in the gardens of the tropics and has attractive continuous flowers and a compacted habitat. It is mainly available in tropical rainforests. The plant needs solid ground which is humus-rich, moisture-retentive, and organic matter-rich in soil. They are unavailable near the water bodies because it is not unaffected by floods. M. alliacea also exists in shaded areas of low vegetation as well as small primary forests. It occurs in tropical areas with rainfall (1800-3500mm per year) at a temperature between 20-300C. **(**Sreelakshmi KP and Muthuswamy, 2021**)**

Distribution

M. alliacea is a native plant to South America, distributed from the Amazonian basin, and has been recollected in Bolivia, Brazil, Columbia, Panama, French Guiana, several Caribbean Islands, Suriname, Peru, Guyana, and Cost Arica, Ecuador, etc.**(**Sreelakshmi KP and Muthuswamy, 2021**)**

Fig 02: Transverse section of a leaf of M. alliacea
(Cu: Cuticle; Ep: Epidermis; Ph: Phloem; Xy: Xylem)

Pharmacognostic evaluation

Organoleptic characteristics of M. alliacea leaf was evaluated by noticing green in colour while, flowers are purple to white in colour, Characteristic in odor, Characteristic in taste, and smooth in texture as outlined by WHO quality control techniques for herbal medicine.And microscopic evaluation shows Transverse section ofM. alliacealeafin figure 02,having Lamina contain an upper epidermis covered with thin cuticle and covering trichomes. Covering trichomes are blunted, thick-walled and single celled with unicellular. The endodermis exposed the presence of phloem and xylem. The both region was the same, which contains xylem fibres, xylem vessels, and xylem parenchyma.(Rao AL et al.,2019)

Chemical composition

M. alliacea contains some medicinal properties such as,phytosteroids, alkaloids, flavonoids, saponins, phenol, carbohydrates, gums and mucilage etc. and this are responsible for numerous pharmacological activities.(Markam J, et al., 2018)Non volatiles compounds of the flowers of M. alliacea methanol extract in India yielded β-amyrin and β-sitosterol, ursolic acid, the flavones apigenin, luteolin and 7-O-methylscutellarein, β-sitosteryl-d-glucoside, scutellarein-7-glucuronide, the flavone glucoside apigenin-7-glucoside, the flavones glucuronides apigenin-7-glucuronide, apigenin-7-glucuronyl glucuronide, apigenin-7-O-methylglucuronide, Alliin, cyanidin-3- rutinoside, . The petrol extract of the dried and powered M. alliacea leaves gives aliphatic compounds such as 32-hydroxyhexatriacontan-4-one, 19-hydroxyhexatriacontan-18-one, pentatriacont-1-en-17-ol, 34-hydroxy-8-methylheptatriacontan-5-one, n-alkanes C25-C35, n-alkanols, the steroids stigmasterol, β-sitosterol, fucosterol, 24-ethylcholest-7-ene-3β-ol. The triterpenoids glycyrrhetol, β-peltoboykinolic acid and 3β-hydroxyurs-18-en-27-oic acid, were also obtained from the leaves extract. (Zoghbi MD, 2009)

Traditional uses

The plant M. alliacea has immense medicinal value. In folk treatments the plant parts are widely used for colds, as an aid to fertility, and commonly added to baths to treat feverish conditions, flu, body aches, cramps, fatigue, mosquito and snake repellent, epilepsy, uterine disorders, etc. Infusion of dried Ariel parts M. alliacea has been used as a vermifuge in the treatment of fever and rheumatic pains. They are also used for cleaning and purification purposes. The commercials use fresh and dried leaves, stem, bark, and roots as a perfume preservative, Application of crushed leaves or The alcoholic extract of the root, barks, and leaves are used for the arthritic area for relieving pain means to treat rheumatism and

atherosclerosis conditions and Crushed leaves are used for headaches. Extracted bark is used to treat epilepsy. The Indigenous people used the plant in magic to scare away the bad spirits. In Brazil, leaf infusions of M. alliacea have been used to treat ailments like colds, and fever, as a condiment and analgesic for headaches. The decoction of Stem and leaves is used as an external wash for conditions such as pains in addition to muscular fatigue in Guiana. The dried leaf extract is used in conditions like cold, pneumonia, and malaria, as insecticidal, and used for an emetic. (Das M, et al,. 2009; Desmachelier C, et al,. 1997;et al,. 2004; Dr. Lal.2019)

Pharmacology of M. alliacea

Depressant Activity

Rota-rod method and Actophotometer test used to determine depressant activity: Diazepam (2 mg/kg) and ethanolic extract of M. alliacea (400 mg/ kg) treated rat groups to showed significant CNS depressant activity when compared to control however this depression activity was less effective for ethanolic extract of M. alliacea treated group than diazepam treated group. So, due to these results, it is concluded that the ethanolic extract of M. alliacea contains a significant amount of alkaloids, glycosides, saponins, flavonoids, carbohydrates, tannins, and phenolic compounds that exhibit depressant activity.(Teja1 N, et al., 2020)

Anti-inflammatory Activity

M. alliacea hydro-ethanolic extract encourages antinociception in inflammatory pain and arthritis. This analgesic effect may be recognized in compounds in its constitution and also seems to be mediated by the opioid system mainly through δ-opioid receptors. So, further studies are needed to confirm its strict mechanism of action. Moreover, M. alliacea does not cause adverse effects of opioids as well as other analgesic drugs in therapeutic doses. The reviews suggest that M. alliacea may be characterized to treating inflammatory pain, such as arthritis with not any detectable adverse effects.(Dunstan et al., 1997; Zoghbi et al., 2009; Hamanna FR, et al., 2019, Pires FB., et al. 2017)

Anticancer Activity

M. alliacea contains high concentrations of chemical components and is use for the suppression of tumor growth i.e. used as an Anticancer. There was a significant deterioration in the number of cancer cells at the treatment concentrations, whereas there was no decrease in cancer cells at the lower concentrations of the extract. Moreover, Garlic vine extract caused inhibition of the non-cancerous NIH Swiss cell growth short of eliminating these populations or expressively reducing their population size. Most remarkably, at these levels of treatment, the cancerous cell population is suggestively decreased however non-cancerous cells are inhibited in their growth.(Towne CM, et al., 2015)

Antioxidant Activity

The M. alliacea Plant extracts used to determine the phenolic constituents by HPLC-DAD enables the separation and identification of antioxidants such as gallic acid, catechin, caffeic acid, rutin, ferulic acid, quercitrin, and resveratrol. The plant extract shows the concentration of antioxidants found in the medicinal species. While the chemical composition of M. alliacea is largely determined by the genetic characteristics of the species, environmental factors, and different extraction methods, For this reason, studies to ensure the desired concentrations of active compounds.(Pires FB, et al., 2017; Ameenabee SK, 2020)

Anthelmintic activity

The ethnomedicinal use of M. alliacea to anthelmintic activity, which recommends that plant represente resource of anthelmintic Activity. The M. alliacea has a substantial dose-dependent anthelmintic property relative to normal anthelmintic. But, methanol extract shows excellent effects for M. alliacea may be attributed to bioactive phytoconstituents like alkaloids, flavonoids, tannins, and saponins. Several of these phytoconstituents, such as alkaloids, flavonoids, tannins, phenols, may account for the significant anthelmintic activity.(Prasanth SBK, et al., 2020)

Antimalarial activitys

The whole plant extract of M. alliacea was resulted for antimalarial activity with against Plasmodium falciparum strains by using the dose of 500 mg/ kg body weight and action was observed and noted the antimalarial property.(Ruiz L, et al., 2011)

Antifungal Activity

Leaf extract of M. alliacea was verified against the fungal strains of Curvularialunata, Alternaria alternata, Alternaria brassicicola, Alternaria brassicae, Colletotrichum capsici, Alternaria carthami, Fusarium oxysporum, and Fusarium udum. The extracts showed significant antifungal activities.(Freixa B, et al., 1998)

Antibacterial activity

Leaves extract of M. alliacea shows antibacterial activity with n-hexane, chloroform, ethanol, and aqueous, against the strains of Gram-positive bacteria (Bacillus subtilis and Staphylococcus aureus) and Gram-negative bacteria (Escherichia coli and Pseudomonas aeruginosa) at 10-2.5mg/ml minimum inhibitory concentration (MIC). So, M. alliacea leaves are used to inhibit the growth of bacteria. The activity produces the effects due to the existence of secondary metabolites such as anthraquinone, alkaloids, steroids, flavonoids, tannins, and saponins. **(**Sundas Iltaf, et al,. 2016)

Hypocholesterolemic activity

Dried flower extract of M. alliacea produces hypocholesterolemic activity in rats were fed about 6 weeks with 2% level in diet. The M. alliaceaflower produce lowering of absorption of dietary cholesterol from intestine and gives the effect due to organosulphur compounds present in M. alliacea flowers. (Srinivasan MR, Srinivasan K., 1995)

Larvicidal activity

TheM. alliacea essential oils and hydrolat shows larvicidal activity in ethanol,methanol and aqueous extracts. The 10% extracts of reduced in 6.15, 3.42 and 5.57 days, were inhibited the normal growth and improvement of mosquito larvae, prolonging and suspending the larval and pupal duration. Larvicidal activity is produce due to the presence of diallyl disulfide and diallyl sulfide in M. alliacea. (Echegoyen CG, et al.,2014)

CONCLUSION

M. alliacea (Lam.) belonging to the family Bignoniaceae, usually named ‘Garlic vine’ and or ‘false garlic’. This review gives information about the vernacular name, taxonomy, habit and habitat, Distribution, morphological characters, chemical constituents, traditional uses, and phytochemical and pharmacological properties of M. alliacea. The plant has immense medicinal value. In folk treatments the plant parts are widely used for colds, as an aid to fertility, and commonly added to baths to treat feverish conditions, flu, body aches, cramps, fatigue, mosquito and snake repellent, epilepsy, uterine disorders, etc. The chemical composition of plants includes alkaloids, flavonoids, saponins, phenol, carbohydrates, gums mucilage, etc. Also includes some constituents as diallyl disulfide, diallyl trisulphide, alliin, allicin, propyl allyl, divinyl sulfide, diallyl sulfide, dimethyl sulfide, daucosterol, etc. The numerous chemical constituents are responsible for numerous pharmacological activities of Mansoa species such as Depressant Activity, Anti-inflammatory Activity, Anticancer Activity, Antioxidant Activity, Anthelmintic activity, Antimalarial activity, Antifungal Activity, Antibacterial activity.

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