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Phyto-pharmacological Review on *Leonotis nepetaefolia* (L.) R. Br.

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Abstract

Natural products, particularly of plant origin, are the main quarry for discovering promising lead candidates and play an imperative role in the upcoming drug development programs. Ease of availability, low cost, and least side effects make plant-based preparations the main key player of all available therapies, especially in rural areas. In the present paper phytochemistry and pharmacological significance of *Leonotis nepetaefolia* was highlighted.

Key-words: Phytochemisty, Pharmacology, Traditional importance

Introduction

In spite of great advances of modern scientific medicine, traditional medicine is still the primary form of treating diseases of majority of people in developing countries including India; even among those to whom western medicine is available, the number of people using one form or another of complementary of alternative medicine is rapidly increasing worldwide. Increasing knowledge of metabolic process and the effect of plants on human physiology has enlarged the range of application of medicinal plants.

Medicinal Plants are known for their uses by ancient man from time immemorial. Even in present time, MP is used in their crude forms or their extracts are used for treatment and prevention of many diseases. MP can be defined as plants possessing medicinal properties which can be used for traditional or allopathic healthcare system. These plants may found to be useful as food, cosmetics, aromatics and condiments.[1-3]

Leonotis nepetaefolia (L.) R.Br. commonly known as Bada Guma Family: Lamiaceae Parts Used: Root, Leaves, Fruit, flowers, Seed Medicinal uses: This plant is antispasmodic, antipyretic, diuretic, antiviral and bactericidal. The plant helps in problems like gonorrhea, constipation, stomach ache, dyspepsia, opthalmia and urinary disorders. The plant is also used for relieving flu, dropsy, diabetes, jaundice, asthma, bronchial infection, liver cirrhosis, genito urinary system ailments and viral hepatitis.[4]

Fig. 1: *Leonotis nepetaefolia* (L.) R. Br.: Flowering Twing

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Phyto-pharmacological significance of the plant was mentioned below: [5-13]

Antioxidant activity

The DPPH assay showed methanol extract of L. nepetifolia leaves to be more significant in scavenging free radicals with inhibition percentage of 60.57%. From the data obtained, the methanol extract proved to be significant in all antioxidant assays and this effect was well comparable with the standard used in the study. The radical scavenging activity of the three solvent extracts of L. nepetifolia was studied using DPPH method as proposed by Harini et al. with minor modifications. Varying concentrations of the leaf extracts (dissolved in DMSO) was added to 5 mL of methanolic solution of DPPH (0.1 mmol/L), shaken vigorously and allowed to stand for 20 min at 27°C, and the absorbance was measured at 517 nm. Pure DPPH solution served as control.

Antidiabetic activity

Ethanolic whole plant extracts of L. neptefolia at high dose (500mg/kg) exhibited significant antidiabetic activity than ethanolic whole plant extracts at low dose (250mg/kg) in alloxan induced diabetic rats.

Anticancer activity

Ethanolic extract of L. nepetaefolia R. Br (EELN) was administered at the dose level of 100, 200 & 300 mg/kg.bw./day for 14 days to the experimental animals after 24h of Tumor inoculation. The antitumor effect of EELN was assessed by studying the parameters such as Tumor volume, PCV, viable and non-viable cell counts, life span, Hematological and antioxidant profiles. Administration of EELN decreased the body weight, Ascites fluid volume, PCV and Viable cell counts and increased the mean survival time of tumor bearing animals. The EELN brought back the altered levels of hematological parameters and antioxidant enzyme levels in dose dependent manner in EAC bearing mice. The results obtained were comparable with that of the standard drug 5- Flurouracil (20mg/kg.bw.).

Anti-inflammatory activity Several extracts of aerial parts of L. nepetifolia showed anti-inflammatory activity on TPA-induced edema test in mice. It is a screening to evaluate the ability of test compounds or extracts to prevent an inflammatory reaction in response to the edemogen 12-O-tetradecanoylphorbol-13-acetate (TPA).

Anticonvulsant activity

Anticonvulsant studies on the crude methanol extract of L. nepetifolia capitulum were carried out at doses of 150, 300 and 600 mg/kg using Maximal Electroshock Test (MEST) in chicks, Pentelynetetrazole (PTZ), Strychnine (STN) and 4-Aminopyridine (4-AP) induced seizure tests in mice. The extract (150 mg/kg) exhibited 66.67% protection against PTZ-induced seizure and increased the mean onset of seizure. The extract also showed anticonvulsant activity against STN induced seizures by protecting 66.67% of the mice against seizure and increased significantly the latency of seizure onset. The extract showed no activity against MEST and 4-AP induced seizures. The results suggest that the crude methanol extract of L. nepetifolia capitulum contains bioactive compounds which possess anticonvulsant activity, thus giving credence to the traditional use of this plant in the treatment of epilepsy.

Antimicrobial Activity

The essential oil of L. nepetaefolia (Family - Labiatae) was tested for its antibacterial activity against both Gram positive and Gram negative bacteria and found to be moderately active excepting Pseudomonas aeruginosa. The essential oil also was found to be inhibitory to dermatophytic fungi and suppressive to other aerial fungi. Hence the oil may be quite useful in skin infection due to dermatophytes even with secondary bacterial infections.

Wound healing activity

Topical administration of ethanolic extract of the L. nepetifolia R.Br., on the healing of burn wounds. The burn wound was created by using a rod of 2.5 cm diameter, which was heated to 80-85oC for 20 seconds. The

control rats were undressed and the standard drug treated rats were dressed with Soframycin, while experimental rats were dressed with plant extract ointment. The plant extract treated wound healed much faster as indicated by improved rate of contraction and a decreased period of epithelialization. Biochemical studies revealed a significantly increase in Hydroxy proline, Hexosamine, Super Oxide Dismutase and also reduced the Lipid Per Oxide in the granulation tissues of plant extract treated wounds when compared with control and standard drug. From the result, it has been concluded that, the ethanolic extract of L. nepetifolia R.Br., has greater wound healing activity.

Hepatoprotective activity

L. nepetifolia provided protection against Acetaminophaen induced - hepatic damage in this animal model with maintained liver enzyme and architecture. L. nepetifolia used as prophylaxis and therapeutic interventions in Acetaminophen induced hepatotoxicity.

Antidiarrheal Activity

The antidiarrheal effect of ethanolic leaf extract of L. nepetifolia revealed a decrease in transit distances covered by the charcoal meal at all doses of the extract which were statistically significant when compared with both positive and negative controls.

Conclusion

The plant, as one of the important sources, still maintains its original place in the treatment of various diseases. The present review focused on phyto-pharmacological profile of the selected medicinal plant.

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