

Review Article

Pharmacological activity of *Tamarix troupii*: A short Review

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Abstract: India is one of the richest floristic regions of the world and has been a source of plants and their products since antiquity and man uses them in different ways according to his needs, particularly as food or as medicine. *Tamarix troupii* is a popular medicinal plant has long been used in ayurvedic system of medicine. The plant has been found to exhibit diverse pharmacological activities. The present short communication presents the recent scientific update on this plant with therapeutic potential.

Keywords: *Tamarix troupii*, Pharmacological activity

INTRODUCTION

Plants have also been used as medicines for thousands of years all over the world. WHO estimates indicate that 80% of the population, mostly in developing countries still relies on plant-based medicines for primary care WHO 1978. The different systems of medicinal usage practiced in India, Ayurveda, Siddha, Unani, Amchi and local health traditions, utilize a large number of plants for treatment of human and animal diseases. Those plants used were called as medicinal plants. India is a country with a vast reserve of natural resources and a rich history of traditional medicine. Medicinal plants contain numerous biologically active compounds which are helpful in improving the life and treatment of disease. Compounds such as carbohydrates, proteins, enzymes, fats, oils, terpenoids, flavonoids, sterols simple phenolic compounds etc [1-2].

Man uses plants in many ways to meet his basic needs food, clothing and shelter. Wild plants supply medicines, crafts and cosmetics to rural and urban communities. In addition, wild plants are the sources of income and employment to the rural areas [3].

Use of medicinal plant to cure specific ailments has been invoked from ancient times. This Medico lore is passed over from generation to generation traditionally all over the world. Nature has bestowed mankind with several plants which contains natural substances which cure diseases & promote health. Such medicinal plants are also rich sources to develop secondary metabolites which are also potential in curing different ailments. In the past decades, there is

increased attention and interest in use of herbal medicines globally [4].

Tamarix troupii (Family- Tamaricaceae), locally known in Bangladesh as 'Nona jhau', is mainly growing up gregariously on newly formed alluvial land rivers and by the coastal areas. These plants are mainly found as green, branchlets shrub or small tree. It is distributed in the coast forests of Bengal, Pakistan, Ceylon, Burma, Malay and Andamans. Different chemical constituents, particularly from the leaf, flower and bark, have been reported in the plant¹. This plant used for fuel wood and timber in certain areas in the world. This plant is mainly found in the salty regions and is found between interdunal areas of the desert. The bark is bitter and an astringent, tonic; fruit and leaves are useful for dysentery and chronic diarrhea [5-8].

Synonyms: *T. gallica* Dyer. (*non L.*), *T. indica*.

Vernacular Name: Sanskrit: Jhavuk, Hindi : Jhau, Jhuva, Oriya: Jaula, English: Tamarix

Taxonomical classification

Kingdom	Plantae
Phylum	Magnoliophyta
Class	Magnoliopsida
Order	Violales
Family	Tamaricaceae
Genus	Tamarix
Species	Troupii

Description of the Plant:

A shrub or small evergreen tree, with slender erect or pendulous branches. Leaves 2.5-4 mm long, subulate-acute from a triangular semi-amplexicaul base. Flowers hermaphrodite, numerous, crowded, in slender lateral and terminal, paniced spike-like racemes. Petals oblong, rounded and often notched at the top, pink. Capsule about 4 mm long, conical, somewhat trigonous, pale pink [9, 10].

CHEMICAL CONSTITUENTS:

The major chemical constituents of *Tamarix indica* are tannin (50%), tamarixin, troupin, 4-methylcoumarin and 3,3-di-O-methylellagic acid. Several types of polyphenols (anthocyanins, tannins, flavonones, isoflavonones, resveratrol and ellagic acid) are currently reported. the presence of some antioxidant compound i.e. terpenoids (carotenoids and essential oils). Presence of these compounds exhibit a wide spectrum of medicinal properties, such as anti-allergic, anti-inflammatory, anti-thrombotic [10] .

PHARMACOLOGICAL ACTIVITY

ANTINOCICEPTIVE,

Habiba *et al* investigated That methanolic extract of the dried leafs of *Tamarix indica* for its possible antinociceptive, antidiarrhoeal and cytotoxic activities in animal models. The extract produced significant writhing inhibition in acetic acid-induced writhing in mice at the oral dose of 500 mg/kg body weight ($p < 0.001$) comparable to the standard drug diclofenac sodium at the dose of 25 mg/kg of body weight [11].

Rehman *et al* evaluated the antinociceptive activity using acetic acid induced writhing in mice and anti-inflammatory activity using carrageenan induced rat paw edema and found that methanolic extract of tamarix showed significant inhibition of writhing when compared to control. at the dose of 250 and 500 mg/kg bodyweight the extract produced 47.94% and 64.47% inhibition respectively. where as methanolic extract showed significant inhibitory effect in paw edema carrageenan induced paw from first to fifth hour. The highest inhibitory effect was found in third hour were inhibition was 24.59% and 40.28% at the dose of 200 and 400 mg/kg respectively [12].

Sarker *et al* studied the antinociceptive activity of the methanolic extract of the barks of tamarix indica roxb. Was using acetic acid-induced writhing model in swiss albino mice. The extract produced About 26.89% and 43.55% writhing inhibition at the dose of 250 and 500 mg/ Kg of body weight respectively, which was comparable to the standard drug diclofenac sodium Where the inhibition was about 63.64% at the dose of 25 mg/kg of body weight. At the Above doses, the extract exhibited significant and dose dependent antinociceptive activity in acetic Acid-induced writhing model in swiss albino mice [13].

ANTIDIARRHOEAL

Habiba *et al* reported that methanolic extract showed antidiarrhoeal activity on castor oil induced diarrhoea in mice, it increased mean latent period and decreased the frequency of defecation significantly at the oral dose of 500 mg/kg body weight ($P < 0.001$) comparable to the standard drug Loperamide at the dose of 50 mg/kg of body weight [11].

CYTOTOXIC ACTIVITY

Habiba *et al* also studied the cytotoxic The brine shrimps used for cytotoxicity test were obtained by hatching 5 mg of eggs of *Artemia salina* in natural seawater after incubation at about 29°C for 48h. The larvae (nauplii) were allowed another 48 h in seawater to ensure survival and maturity before use. Five doses of plant extract (1, 2, 4, 6, 8 and 10 µg/ml) in 5% DMSO and/or sea water were tested. Each extract preparation was dispensed into clean test tubes in 10 ml volumes and tested in duplicates. The concentration of DMSO in the vials was kept below 10 µl/ml. For control, same procedure was followed except test samples. After marking the test tubes properly, 10 living shrimps were added to each of the 20 vials with the help of a Pasteur pipette. The test tube containing the sample and control were then incubated at 29°C for 24 h in a water bath, after which each tube was examined and the surviving nauplii counted. From this, the percentage of mortality was calculated at each concentration and reported that the extract showed lethality against the brine shrimp nauplii. It showed different mortality rate at different concentrations [11].

ANTIBACTERIAL

Rehman *et al* studied Antidiarrhoeal activity of the methanolic extract of leaves of *Tamarix indica* using the model of castor oil-induced diarrhoea in mice. Diarrhoeal initiation time and the number of stools excreted by the animals in 4 hours were collected. The extract caused an increase in latent period (0.7h) and (0.9h) i.e. delayed the onset of diarrhoeal episode of 500 mg/kg body of weight significantly ($P < .01$) which was comparable to the standard drug loperamide at the dose of 50 mg/kg body weight in which the resulted value was 1.5h . The selected concentration of the extract also showed a good diarrheal inhibition with 44.8%. Loperamide, standard antidiarrhoeal agent showed an inhibition of 71.4%. [12] .

APHRODISIACS

Singh *et al* reported that bark of tamarix indica is used in treatment of aphrodisiacs [14].

REFRENECES

1. Harish KH., Anup P, Shruthi; A review on ;*Murraya koenigii*: multipotential medicinal plant; Asian J Pharm Clin Res; 2012; 5(4):5-14.

2. Shivananda N; Influence of Ethanol Extract of *Vinca rosea* on Wound Healing in Diabetic Rats; Online Journal of Biological Sciences, 2006; 6(2): 51-55.
3. Kokwaro JO; Medicinal Plants of East Africa. 1st ed. Nairobi: Kenya East Africa Literature Bureau; 1976
4. Ranjeet S, Sandeep VB, Manish B, Gangasagre NS; Phyto-constituents Bio-efficacy and Phyto-pharmacological activities of *Terminalia chebula*- A Review, Int. J. Ayu. Alt. Med., 2013; 1(1):1-11.
5. Ghani A; Medicinal Plants of Bangladesh- Chemical constituents and uses, 2nd edition, The Asiatic Society of Bangladesh, Dhaka. 2003; 323-5, 505-7.
6. Khan MA, Ansari R, Gul B, Qadir M; Crop diversification through halophyte production on salt-prone land resources, 2006; 1(048):1-9.
7. Qureshi R, Bhatti GR; Diversity of micro-habitats and their plant resources in Nara desert, Pakistan. Pak J Bot, 2008; 40(3):979-992.
8. Panwar AQ, Abro H; Ethnobotanical studies of Mahal Kohistan (Khirthar National Park). Pak. J. Bot. 2007; 39(7):2301-15.
9. Kirtikar KR, Basu ; Indian medicinal plant ; 2 edition Indian press allhabad, pp 61-62.
10. Sehrawat A, Sultan S; *Tamarix gallica* ameliorates thioacetamide-induced hepatic oxidative stress and hyperproliferative response in wistar rats. J Enzyme Inhibit. Med. Chem; 2006; 21; 215-223
11. Habiba U, Bose U, Rahman AA; Antinociceptive, Antidiarrhoeal And Cytotoxic Activity Of *Tamarix Indica* Leaf Pharmacologyonline, 2010; 1: 275-283.
12. Rehman M, Haque E, Hasanuzzaman M, Shahid I.Z; Antinociceptive, antiinflammatory and Antibacterial Properties of *Tamarix indica*; International Journal of Pharmacology, 2011; 7(4) 527-531.
13. Sarker M, Sarker A; Antinociceptive activity of methanol extract of *Tamarix indica* Bangladesh J Physiol Pharmacol, 2009; 25(1&2) : 1-3.
14. Singh B, Gupta V, Bansal P, Singh R, Kumar D ; Pharmacological Potential Of Plant Used As Aphrodisiacs; International Journal of Pharmaceutical Sciences Review and Research, 2010; 5(1):104-113.