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Prosopis Cineraria (L.) Druce: A Boon Plant of Desertan - Overview

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Abstract: ***Prosopis cineraria (L.) Druce is a deep rooted, nitrogen fixing, multipurpose tree endemic to the hot deserts of India. The tree is known locally as Jandi or Khejri (India), Jand (Pakistan), and Ghaf (Arabic). Its synonym is P. spicigera, it is a very significant tree of the Thar Desert of India, contributing to ecological stability of the region and providing extensive support to human beings, livestock, The antibacterial activity of the various extracts of the stem bark of Prosopis cineraria (Linn.) . The extracts were prepared by continuous hot percolation method with chloroform and methanol. Aqueous extract was prepared by maceration. The presence of phytosterols, flavonoids, tannins, phenols, carbohydrates, proteins and amino acids were detected in the preliminary phytochemical tests.***

Keywords: *Prosopis cineraria*, Botanical details, Phytochemical reports, Pharmacological reports, Therapeutic importance

1. Introduction

The Great Indian Desert, popularly known as the Thar, includes some portion of Northwest India.

Prosopis spicigera Linn. (Syn. Prosopis cineraria (L.) Druce.) belonging to the family Fabaceae, is a moderate sized evergreen thorny tree, with slender branches armed with conical throns and with light yellowish-green foliage. Prosopis cineraria tree occurs in the dry and arid regions of India. It is one of the chief indigenous trees of the plains of the central and southern India. Leaves are eaten as a fodder by cattle. Smoke of leaves good for eyes. The stem is often rich in tannin sacs and gum passages; they are used as fodder due to presence of rhamnose, sucrose and starch. Stem portion and wood are generally used as good fuel for the tribal people. The Bark is thick, dark brown in color and hard. It is available in the form of single quill and pieces. Liver-warts and lichens are located on the surface of bark. Stem bark is recommended for snake bite. The flowers are small in size and yellowish in color; appear from March to May after the new flush of leaves. Flowers are mixed with sugar and used during pregnancy as safeguard against miscarriage. Fruits are legume and sweet in taste. Fleshy pods are sickle shape which are10 to 20 cms long and contain sweetish mucilaginous pulp. Pods are mature in May-June before the onset of the rain. Seeds are dark brown in color packed in brown pulp. Seeds contain fixed oil those are major part of cattle feed.

2. Vernacular Names

Sanskrit: Sami
English: Mesquite
Hindi: Shami, Jhand
Gujarati: Khijado
Marathi: Shemi
Telugu : Jambi
Panjabi: Jhand
Sindhi: Candy
Rajasthani: khejari

Taxonomical Classification:

According to the botanical scheme of Engler, the plant is classified as follow:
Kingdom: Planate
Division: Phanerogamae
Subdivision: Angiospermae
Class: Dicotyledonae
Subclass: Polypetalae
Order: Fabales
Family: Fabaceae
Subfamily: Mimosaceae
Genus: *Prosopis*
Species: *spicigera*

3. Botanical Description

Roots: The root system of *Prosopis cineraria* is long and well developed. Growth above the ground is slow but below the ground the roots penetrate deeper and deeper for the sub soil water. Very deep roots help in securing firm footing and in obtaining moisture supplies from deep soil layers. Taproot penetration up to 35 m depth has been reported.

Stem: Stems are erect branched, terete, solid, woody and strong having diameter about 13-16 cm. Young twigs are purplish green in color. Spines (0.3 to 0.6 cm long) and galls are present on the stem. It is also having annular rings in the woody portion. The stem tissue is often rich in tannin sacs and gum passages.

Bark: The Bark is thick, dark brown in color and hard. It is available in the form of single quill and pieces. Liver-warts and lichens are located on the surface of bark.

Leaves: Compound, bipinnate, stipulate, stipules modified into spines, Alternate, petiolate. Leaflets are ovate, Apex is mucronate, base is unequal, margin is entire and reticulate venation. Size of leaf is 1-1.5 cm. long and 0.4-0.6 cm. broad.

Inflorescence: Racemose Spike.

Flowers: Flowers are regular, bisexual, bracteate, complete, zygomorphic, pentamerous hypogynous.The flowers are small in size and yellowish in colour, appear from March to May after the new flush of leaves.

Calyx: Sepals are 5, lobed, gamosepalous, valvate and yellowish in color.

Corolla: Petals are 5, gamopetalous, valvate and yellowish in color.

Androecium: Stamens are free and 10 in number. Amongst 10 filaments 5 filaments are long and 5 filaments are short. Anthers are two celled and dorsifixed.

Gynoecium: Monocarpellary superior ovary, Uni-locular, Marginal placentation. Style is filiform. Stigma is capitate.

Fruit: Legume (pod). Fleshy pods are sickle shape which are10 to 20 cms long and contain sweetish mucilaginous pulp. Pods are mature in May-June before the onset of the rain.

Seeds: Seeds are non endospemic and dark brown in color packed in brown pulp. Seeds are ovoid in shape. 10-25 seeds are present in 1 fruit.

Chemical Constituents
It contains sugars, five flavonones, fatty acids, tannins and alkaloids. Analysis of the beans (immature fruits) gave (dry matter basis): moisture73, protein 18, fat 2, crude fiber 20, total carbohydrates 56, and Ash 4% and Ca 414, P 400, Zn 4, Fe 19 and Mn 4 mg/100 gm. It has exceptionally high level of vitamin C 523 mg/100 gm. The seeds contain 3.5% of fatty oil containing oleic acid and linoleic acids (80%). Analysis of the leaves gave crude protein 14-15, crude fiber 18-22 and minerals 5 to 6.9%. Stem bark contain vitamin K1, n-octacosyl acetate, the long chain aliphatic acid. Presence of glucose, rhamnose, sucrose and starch is also reported.

Prosopis has been found to contain 5- hydroxytryptamine, apigenin, isorhamnetin-3-diglucoside, l- arabinose, quercetin, tannin and tryptamine. the isolation of a flavone glycoside Patulitrin 3, 5, 6, 3, 4- pentamethoxy-7-hydroxy flavone from flowers of *Prosopis cineraria*.

Seeds contain non-glycosidic polyphenolics, gallic acid, patuletin, luteolin, and a new compound named prosogerin – E (6, 7-dihydroxy-3', 4', 5'- trimethoxyflavone).other compounds are glycosidic polyphenolics, patulitrin, and rutin. *Prosopis cineraria* plant produces gum, which is obtained during May and June. The flavone glycoside patulitrin has been isolated from the flowers.

4. Traditional Properties and Uses

Fruits are used as a food in the desert area during scarcity. It is also rich source of vitamins for the tribal people. The leaves besides the pods are eaten by camels, goats and cattle. Ashes rubbed

Over skin to remove hair. Leaves of the Prosopis have high nutritional value and known as "Loong". The leaf of the Prosopis also have pharmaceutical property like the leaf paste of Prosopis cineraria is also applied on boils and blisters including mouth ulcer. Leaf extract of the Prosopis shows Antibacterial, Ant hyperglycemic and Antioxidant activity. The smoke of the leaves of prosopis is considered as good for eye Trouble.

Pod of the prosopis is locally called as "sangri". It is considered as dry fruit of rajasthan and important ingredient of rajasthani dish well known as "Panchkuta". Sangri fulfill the essential requirement of the body and provide nutrients like Carbohydrate, fats minerals, protein etc.

Hindus worship khejri trees during the Dussera festival. Leaves are good forage with 12-18% Crude Protein while the pods contain 10-13% Crude Protein.

The dry pods of the Prosopis is known as "Marwari Mewa". It reduces the craving of water in the summer due to this it is sometimes used by the farmers in lean periods. Pods of the prosopis increase milk production in milch animals.

Commercial uses
The wood is used for making agricultural implements viz., ploughs, yokes and beams. Branches lopped as fodder for goats. The wood is a good fuel rating 5,000 kcal / kg. Wood ash serves as a potash source. Bark and leaf galls used for tanning. The tannins of the plant may be used as repellent to control the house sparrows.

Medicinal uses of Plant
Prosopis cineraria flower is pounded, mixed with sugar and used during pregnancy as safeguard against miscarriage. The bark of the tree is dry, acrid, and bitter with a sharp taste; cooling anthelmintic; tonic, cures leprosy, dysentery, bronchitis, asthma, leucoderma, piles and tremors of the muscles. The bark is used as a remedy for rheumatism, in cough colds, asthma. The bark is prescribed for scorpion sting. The smoke of the leaves is good for eye troubles. The fruit is dry and hot, with a flavour, indigestible, cause biliousness, and destroys the nails and the hair. Prosopis also have pharmaceutical property like the leaf paste of Prosopis cineraria is also applied on boils and blisters including mouth ulcer.

5. Future Prospective

It is observed from various studies that the Prosopis cineraria have a number of pharmaceutical and medicinal properties and according to this it is effective in the treatment of a number of chronic diseases, But a Huge research work is required. This is the tree that is effective in treatment of various diseases without producing any side effect. The government of india is required to provide proper care for this tree specially in desert area and providing proper plan related to the pest control that is the most common requirement for the growth of the tree.

In the recent years the Khejri tree is declined in Thar Desert. The main regions behind of this are Lowering of the water table, Mechanization of farm lands, and uncontrollable pest growth. About 153 pests are reported in all over the world that damage the species specially Prosopis cineraria. In north western India the Bugs are reported that damage the tree rapidly. Pharmacological reports are not sufficient regarding medicinal use of *Prosopis cineraria* Linn. So Pharmacological screening is urgent need for providing benefits of this plant to common man and even tribal people, because it easily available cheaper plant as a medicine and food.

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