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## “Review On Various Biological Activity Of Prosopis Cineraria”

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**Abstract:** Prosopis cineraria (fobeaceae) is a small sized tree found in the regions of Arabia and various parts of India such as Rajasthan, Gujarat, Haryana, Uttar Pradesh and Tamil Nadu Prosopis cineraria commonly known as "Khejari" in Rajasthan Dry pods of the plant help in preventing protein calorie malnutrition & iron deficiency in blood, astringent, demulcent and pectoral antimicrobial free radical scavenging. Leaf extracts shows antidepressant, musclesrelaxant and antiemetic anti-diarrheal agents Antioxidants, Antibacterial & Antifungal, Leaves are used in eye infections. Barks of the tree used in the treatment of asthma, bronchitis dysentery, Leucoderma and leprosy anticonvulsant Anti-hyperglycemic & Anti-hyperlipidemia prescribed for scorpion sting & snake bite. Procopius Cinararia contain various Alkaloid, Glycoside, and Flavonoids & Phenolic Compounds.

**Index Terms** - Phytochemical Investigation, different biological activity of Prosopis Cinararia

### Introduction:

Prosopis cineraria (fobeaceae) is a small sized tree found in the regions of Arabia and various parts of India such as Rajasthan, Gujarat, Haryana, Uttar Pradesh and Tamil Nadu Prosopis cineraria commonly known as "Khejari" in Rajasthan Dry pods of the plant help in preventing protein calorie malnutrition & iron deficiency in blood, astringent, demulcent and pectoral antimicrobial free radical scavenging. Leaf extracts shows antidepressant, musclesrelaxant and antiemetic anti-diarrheal agents Antioxidants, Antibacterial & Antifungal, Leaves are used in eye infections. Barks of the tree used in the treatment of asthma, bronchitis dysentery, Leucoderma and leprosy anticonvulsant Anti-hyperglycemic & Anti-hyperlipidemia prescribed for scorpion sting & snake bite. Procopius Cinararia contain various Alkaloid, Glycoside, and Flavonoids & Phenolic Compounds. Prosopis cineraria are a small tree, ranging in height from 3-5 m (9.8-16.4 ft). Leaves are bipinnate, with seven, to four teen leaflets on each of one to three pinnate. Branches are thorned along the

internodes<sup>[10]</sup>. Flowers are small and creamy-yellow, and the tree is found in extremely arid conditions, with rainfall as low as 15 cm annually. As with some other *Prosopis* sp. *Prosopis cineraria* has demonstrated a tolerance of highly alkaline and saline environment.

### **Antimicrobial and antioxidant activities**

In the present study the methanolic leaf extracts of three plant species of family Mimosaceae viz., *Acacia modesta* Wall (Phulai), *Prosopis cineraria* (Linn.) Druce and *Prosopis juliflora* (Swartz) DC. were used to evaluate their antibacterial antifungal and antioxidant activity. Simple maceration method was used for the preparation of plant extracts. The extracts were tested against four strains of bacteria (*Bacillus subtilis*, *Escherichia coli*, *Vibrio cholera* and *Enterobacter aerogenes*) and two strains of fungi (*Aspergillus niger* and *Aspergillus fumigatus*). At 15 mg/ml extract concentration the maximum inhibitory zones observed in *Acacia modesta*, *P. cineraria* and *P. juliflora* were 20, 18 and 25 mm, respectively. *P. cineraria* gave best response against *A. niger* and *A. fumigatus* by producing 15.38 and 8% inhibition, respectively. *P. juliflora* showed 7.69% inhibition against *A. niger*. While *A. modesta* showed 11.53% activity against *A. niger* and 0.8% against *A. fumigatus*. The Antioxidant activities of these medicinal plants also showed significant results. Maximum radical scavenging activity (%RSA) was observed in *P. cineraria* and *P. juliflora*, that is, 60.48 and 47.82%, respectively, as compared to *A. modesta* which gave minimum %RSA value of 41.42%.

### **Anti-Emetic Activity**

Crude methanol extracts of the leaves of *Adenantha pavonina* L., *Peltoforum roxburghii* L, *Prosopis cineraria* L., and *Prosopis juliflora* DC., were evaluated for anti-emetic activity. Emesis was induced by the oral administration of copper sulphate 50mg/kg body weight to male chicks of four days age. The anti-emetic activity was determined by calculating the mean decrease in number of retching in contrast with those of control. All extracts (150 mg / kg body weight orally) showed anti-emetic activity when compared with standard drug Chlorpromazine at the same dose. Among all the extracts, *Prosopis juliflora* showed the highest (73.64%) and *Adenantha pavonina* showed the lowest (50.17%) anti-emetic activity.

### **Anti-Diarrhoeal Activity**

In the present study, in vivo antidiarrhoeal studies were performed on the stem barks of *Prosopis cineraria* (Mimosaceae). Methanolic extract of the drug were evaluated for in vivo antidiarrhoeal activity, used experimental induced diarrhoea models are Castor-oil induced diarrhoea and Charcoal induced gastrointestinal motility test in rats. Pre-treatment with methanolic extract of *Prosopis cineraria* at the doses (150 and 300 mg/kg.p.o) were administered through the oral route. The plant extracts exhibited dose dependent antidiarrhoeal effects in the all treated groups and the results were compared with that of loperamide (1mg/kg, p.o) as reference standard drug. This study confirmed the use of plant stem barks as an antidiarrhoeal agent. Keywords: *Prosopis cineraria* stem barks, Diarrhoea, % inhibition, % protection, Gastric motility.

## **Analgesic Activity**

*Prosopis cineraria* (L.) Druce is a deep rooted, nitrogen fixing, multipurpose tree endemic to the hot deserts of India. Its synonym is *Prosopis spicigera*. It belongs to the family Leguminosae and subfamily Mimosoideae. In view of its medicinal importance, the present research was focused on the analgesic properties of roots of *P. cineraria* by in vitro approach in rats. The analgesic activity of root of *Prosopis cineraria* was studied using hot-plate method and tail-immersion method in rats. Doses of the ethanolic extract of 200mg/kg & 300mg/kg, orally were selected for analgesic activity. The extract at all the doses used and the Diclofenac sodium significantly inhibited both the analgesic activity for hot plate and tail immersion method. The present study demonstrates the potential analgesic effect of ethanolic extracts of *Prosopis cineraria* roots. The dose of 200mg/kg b.w is very effective than 300mg/kg b.w in both above pharmacological models.

## **Hypolipidemic & Antiatherosclerotic Activity**

Dietary antioxidants and flavonoids like phytochemicals occurred in several herbs have potential to improve cardiovascular health. *Prosopis cineraria* (Fabaceae) is also widely uses on above basis for traditional therapeutic purposes. It is the Thar Desert prominent tree. This study evaluated the hypolipidemic and antiatherosclerotic effects of *Prosopis cineraria* bark extract in hyperlipidemic rabbits. The rabbits were made to induce exogenously hyperlipidemic through orally administration of high fat diet and cholesterol powder (500mg/Kg body weight per day in 5 ml of coconut oil orally for 15 days). The induced hyperlipidemic rabbits were treated comparatively by bark extract of *Prosopis cineraria* and standard drug. The administration of *Prosopis cineraria* bark extract (70% ethanol) significantly ( $P \leq 0.001$ ) reduced serum total cholesterol (88%), LDL-C (95%), triglyceride (59%), VLDL-C (60%) and also ischemic indices (Total cholesterol/LDL-C and LDL-C/HDL-C). The *Prosopis cineraria* bark extract also significantly ( $P \leq 0.001$ ) prevented the atherogenic changes in aorta. Toxicity profile parameters were also examined and remained under normal ranges. Results indicated that *Prosopis cineraria* bark has hypolipidemic and antiatherosclerotic efficacy along with non-toxic nature

## **Antibacterial activity**

The antibacterial activity of the various extracts of the stem bark of *Prosopis cineraria* (Linn.) Druce, was evaluated by the agar well diffusion method. 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 aminoacids were detected in the preliminary phytochemical tests. Moderate antibacterial activity was observed in the extracts (250µg/ml) against some pathogenic microorganisms when compared with the standard ciprofloxacin.

## **Anthelmintic**

Anthelmintic activity of different extracts of *prosopis cineraria* (Linn) druce stem bark was evaluated against Indian earthworm. Various concentrations of the extracts were bioassayed for the determination of time of paralysis (p) and time of death (d) of the worm. Piperazine citrate at a concentration of 10 mg/ml has been used as reference standard. In our present study, the crude methanolic extract demonstrated paralysis and also caused death of worms especially at the higher concentration (50 mg/ml) compared to the standard, piperazine citrate. This study confirmed the use of plant stem barks as an anthelmintic agent.

## Anticonvulsant Activity

Abstract: Anticonvulsant activity of the methanolic extract of *Prosopis Cineraria* (Linn) Druce stem barks was studied against maximal electro shock (MES) and Pentylenetetrazole (PTZ) induced convulsions in mice. The extract suppressed hind limb tonic extensions (HLTE) induced by MES and also exhibited Protector Effect in PTInduced Seizures. In conclusion, the methanolic extract of *Prosopis Cineraria* (Linn) stem barks has anti convulsant effect in both models which shows depressant action in the central nervous system. Key words: *Prosopis Cineraria*, anticonvulsant activity, maximal electro shock, Pentylenetetrazole.

## Antioxidant activity

Damage to cells caused by free radicals is believed to play a central role in the aging process and in disease progression. Many aromatic, medicinal and spice plants contain compounds that possess confirmed strong antioxidant components. The medicinal value of plants have assumed an important dimension in the past few decades owing largely due to the discovery as a rich source of antioxidants that combat oxidative stress through their redox active secondary metabolites and the rising concerns about the side effects of synthetic drugs. These factors have inspired the widespread screening of plants for possible antioxidant properties. Scientific interests in medicinal plants are emerging as plants are invaluable sources of new drugs and plant based antioxidants are preferred to the synthetic ones because of safety concerns. To evaluate antioxidant activity of different solvent fractions obtained from the leaves of *Prosopis cineraria*. Scavenging ability of the extracts for radicals like DPPH, ABTS, hydroxyl, superoxide, nitric oxide and hydrogen peroxide were performed to determine the potential of the extracts. All six fractions showed to have scavenging activity. The ethyl acetate and methanolic extracts showed to have maximum scavenging activity

## Conclusion

*Prosopis Cineraria* have multiple biological activity like Antimicrobial and antioxidant activities, Anti-Emetic Activity, Antioxidant activity, Anticonvulsant Activity, Anthelmintic, Antibacterial activity, Hypolipidemic & Ant atherosclerotic Activity, Antibacterial activity, Anti-Diarrheal Activity, Anti-Emetic Activity .It contain various biologically active compounds like carbohydrates ,Alkaloids , Flavonoids ,Phenolic compounds etc. It's a richest source of medicinal active compounds .

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