

Pharmacology of *Capparis decidua* (Kair)

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Capparis decidua belong to Capparidaceae family commonly known as “kair”. *Capparis decidua* is a spiny, heavily branching shrub or tree found in India's arid and semi-arid regions. The tree thrives in dry exposed habitats, typically on hillsides, and in wild states in arid and semi-arid regions of the country. It is mostly found in western Rajasthan, Punjab, Gujarat, the central region, and the Deccan, and grows in all types of waste lands (Kumar *et al.*, 2013). Caper buds are harvested from the wild as well as from cultivated plants, which are usually spineless. The plant is a big, thorny, highly branching, spinous shrub or tree with a clear bole of 2.4 meter that grows up to 6 meter in height (occasionally 10 meter). It grows as a small tree with dense tufts of seemingly leafless dark glossy green branches, minute (2–12 mm in length and 1–3 mm in breadth) caducous leaves found only on new shoots, and a pair of spines at each twig dry conditions, the thin, or transformed water loss through plants can ingest water depths of up to 4 tap root structure. The secondary root system aided the plant's ability when rainfall was



Kair Tree

In excessively leaves are glabrous and into spikes, minimizing transpiration. Caper from the ground at meters because to their existence of a near the ground surface to absorb water even scarce. The importance



Ripe Fruit



Flower

The plant acts as carminative, aphrodisiac, analgesic, alexipharmic, emmenagogue and tonic, potherb, purgative, and appetite enhancer. *C. decidua* is esteemed for its antibacterial, antifungal, antihemolytic, antioxidant, antidiabetic, anthelmintic, anesthetic and antirheumatic activities. Various pharmacological activities such as anti-arthritis, antimicrobial, insecticidal, antiviral, anti-aging, anti-inflammatory and analgesic activities are also attributed to various parts of *C. decidua*. Plant based diets contain a plenty of secondary metabolites that positively affected human health and played role in suppression of ailments.

Traditional Medicinal Uses

1. A powder made from tender leaves and top shoots is antidote to poison and applied to heal blisters, swellings, boils, and eruptions.
2. Pyorrhoea has been treated with a decoction made from crushed stems and leaves.
3. *C. decidua* has also been known to improve facial paralysis and spleen enlargement.
4. Biliousness is treated with the stem and leaves, while fever and rheumatism are treated with the fruit. The decoction of fruit and bark used for treating ulcer, cough, asthma and stomach aches.
5. The plant's root bark had anthelmintic and purgative qualities, and its alcoholic extract had potent antibacterial and antifungal capabilities.
6. A paste of root is applied on scorpion bite, and powdered coal from the stem of *C. decidua* is used to mend bone fractures.

Pharmacological Activity of Kair

Anti-inflammatory and Analgesic Activity

Ethanol extract of aerial parts exhibited anti-inflammatory and analgesic activity. Isocodonocarpine has been discovered to have anti-inflammatory and anti-asthmatic properties. (Yadav *et al.* 1977).

Hypercholesterolemic Activity

The extract of unripe fruits and shoots of *C. decidua* cause reduction in plasma triglycerides, total lipids and phospholipids, hence used as hypercholesterolemic. It appeared to operate through increased fecal excretion of cholesterol as well as bile acids. (Goyal and Grewal, 2003).

Anti-bacterial Activity

C. decidua extracts are also rich in antioxidant compounds, phenolics, flavonoids, rutin, tocopherols, carotenoids and vitamin C. the inhibited growth of *E. coli* can be correlated with flavonoid compound in *C. decidua* extract (Chisty *et al.*, 2017).

The aqueous extracts from the plant were screened by agar diffusion methods for their antibacterial activity against *Rathyibacter tritici*, a causal organism of tundu diseases of wheat. The plant showed the activity against the test bacteria (Bhardwaj and Laura, 2008).

Anthelmintic Activity

Most of the screenings reported are in vitro studies using some worm samples like Indian earthworm *Pheretima posthuma*, *Ascardia galli*, *Ascaris lumbricoids*, etc. Adult Indian earthworm, *Pheretima posthuma* has been used as test worm in most of the anthelmintic screenings, as it shows anatomical and physiological resemblance with the intestinal roundworm parasite of human beings. Because of easy availability, earthworms and *Ascardia galli* worms are used as suitable models for screening of anthelmintic drug. These in vitro screenings are important as they give basis for further in vivo studies. The anthelmintic activity of ethanolic extract of root bark of *Capparis decidua* was evaluated against adult Indian earthworm *Pheretima posthuma* (Annelida) because of its anatomical and

physiological similarity with round worm parasite. The activity was found dose dependent, comparable with Piperazine citrate 10mg/ml at the higher concentration of 100mg/ml of the extract used in the study. (Mali and Mehta, 2008).

Antiatherosclerotic Activity

In a study by Vyas & Purohit the Ethanolic extract of fruit was found to have antiatherosclerosis activity in cholesterol fed rabbits (Purohit and Vyas, 2006).

Antiplateque Activity

Capparis decidua fruit and flower extract have potent activity in preventing plaque formation.

Anti-microbial Activity

The alcoholic extract of root bark possesses significant antibacterial and antifungal activities.

Conclusion

Plants have been utilized in medicine all throughout the world and continue to play an essential role in both traditional and modern medical systems. Modern synthetic medicines are excellent at healing ailments, but they also have a multitude of negative side effects that can lead to major health issues. *Capparis decidua* has been shown to have anti-diabetic, antiplateque, anti-microbial, anti-inflammatory, analgesic hypercholesterolemic, and anthelmintic properties. This review outlines some of the most important pharmacological activities of *Capparis decidua*..

References

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