Review Article

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A Review on *Karir* (*Capparis Decidua* Forssk.) An Ethno-Botanical Plant of Rajasthan

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ABSTRACT:

In India, there are countless medicinal plants that are employed in numerous ancient medical practises. Individually or in combination, these plants have a huge potential to provide direct therapeutic benefit. The use of medicinal plants in modern medicine is expanding. In *Ayurvedic* and classical texts like the *Charaka Samhita* and the Sushruta Samhita, more than 70% of the medications are of herbal origin .Plants are used to treat a variety of diseases, including toothaches, coughs, and asthma, and have a greater range of applications in traditional folk medicine. All investigations showed that the plant has important pharmacological properties such as anti-inflammatory, analgesic, anti-microbial, anti-plaque, anti-hypertensive, and anti-helmintic properties.It is also renowned for being an abundant source of glycosides, phenols, sterols, and alkaloids. In Rajasthan and other places, *C. decidua* (*Karir*) has shown to be a plant with significant commercial value. It offers numerous dietary and medical applications; it is important to synthesise a thorough study of connected topics. Because of this, the current review text concentrates on a thorough profile of important nutrients and biochemical molecules as well as the medical benefits of these substances. To evaluate the nutritional and medical significance of *C. decidua*, an effort is undertaken to study numerous studies on the plant. Furthermore, prior findings still need to be scientifically validated.

Keyword: *C. decidua*, *Karir*, pharmacological, nutritional value, Fruits.

INTRODUCTION

In India, there are countless medicinal plants that are employed in numerous ancient medical practises. Individually or in combination, these plants have a huge potential to provide direct therapeutic benefit. The use of medicinal plants in modern medicine is expanding. In *Ayurvedic* and classical texts like the *Charaka Samhita* and the *Sushruta Samhita*, more than 70% of the medications are of herbal origin.[1] The Persian word *kabar*, which means caper, inspired the Greek name *kapparis*. Over 2000 years have passed since pickled capers were first used as a

condiment.[2] The fruit is a tiny, many-seeded, ovoid or subglobulous, pink berry that resembles a cherry in size and shape. When dried, the fruit turns blackish and is consumed by birds.[3] The plant is a big, spiny, climbing shrub with numerous branches. In India, there are countless medicinal plants that are employed in numerous traditional medical practises. These plants have the capacity to provide direct thera in shrub or tree form up to 6 metres tall (rarely 10 metres), with a clear bole of 2.4 metres. Tender branches with waxy bloom; grey, rough, and corky bark covered in straight or recurved, 3–7 mm long, paired thorns; leaves on young branches, caduceus-shaped, linear, 1–2 cm long, with a short, stiff apex resembling a pickle, very short petioles, and long, straight, orange–yellow stipular thorns.[4] Both wild and farmed caper plants are harvested; grown plants typically lack spines.[5]

MATERIAL AND METHODS

Material related to *karir* (*C. decidua*) is collected from classical *Ayurvedic* literatures textbooks and various scientific published journals. The available commentaries of the *ayurvedic Samhitas* has also referred to collect relevant matter.

AIMS AND OBJECTIVE

The present review manuscript focuses on the detailed profile of valuable nutrients and pharmacological compounds as well as medicinal health functions.

An effort is made to review various studies on *C. decidua* to assess its nutritional as well as importance as *Aahar*.

Literary View

Traditional Uses –

Traditional healers and indigenous peoples use the plant and its components frequently to treat a wide range of illnesses.

Plants are used to treat a variety of diseases, including toothaches, coughs, and asthma, and have a greater range of applications in traditional folk medicine. All investigations showed that the plant has important pharmacological properties such as anti-inflammatory, analgesic, anti-microbial, anti-plaque, anti-hypertensive, and anti-helmintic properties. The compositional investigations showed that C. decidua seeds are excellent suppliers of all three key food groups—carbohydrates, lipids, and proteins. Ancient writings also make reference to the medical properties of C. decidua.[6] For gout, rheumatism, cough, dropsy, palsy, asthma, intestinal worms, and intermittent fever, root bark powder or infusion is utilized. Malignant ulcers are treated externally with the powder;[7].[8] Applying a paste of coal that is made after burning the wood to muscular injuries.[9] A steam volatile sulphur compound produced by the flowers (0.4%) has antimicrobial activity against a variety of bacteria. There are several preparations of C. decidua, including powder and infusion of rootbark (1 in 10), dose: 1/2 to 1 ounce, plant juice ,[10] and powder of leaves and root- 50 to 125 mg.[11] The top shoots and young leaves are dried and ground into a powder that is applied to blisters, boils, eruptions, swellings, and as a poison antidote. Chewing them effectively relieves toothache;[12] a tea made from crushed stems and leaves is used to treat pyorrhea .[13] External use of plant infusion for breakouts, boils, joint conditions, internally for coughs, and as a poisoning antidote. In order to eradicate worms in the ear, utilize fresh plant juice. It is also thought to be a decent senega alternative.[14,15]

Phytochemistry

Table 1: Phyto chemical properties Table 2 Nutritional Value of Plant and Fruit[16-19] Table 3: Pharmaceutical/Therapeutic Potential of Different Caper Parts[20-31]

Pharmacological Properties

Sedative and anticonvulsant effects

Using traditional behavioural animal 0odels, the central nervous system (CNS) activity of an alcoholic extract of aerial components of *C. decidua*, including flowers and fruits, was examined.[31]

Anti-inflammatory and analgesic activity

The use of the plants as crude anti-inflammatory medicines in traditional medicine is supported by the in vitro anti-inflammatory Activity found in their investigation.[32,33]

Anti-diabetic activity

C. decidua may be useful in reducing oxidative stress in diabetes and as an anti-diabetic drug. The anti-diabetic properties of fruits. In erythrocytes, liver, kidney, and hearts of old alloxan-induced diabetic rats, *C. decidua* powder has hypoglycaemic action, lowers lipid peroxidation, and changes superoxide dismutase and catalase levels. Grover et al.[34]

Hypo-cholesterol emic effect

The extract of *C. decidua*'s unripe fruits and shoots lowers plasma triglycerides, total lipids, and phospholipids; it is therefore utilised as a hypercholesterolemic drug. It seemed to work by increasing the excretion of bile acids and cholesterol in the faeces.[35]

Antioxidant activity

Powdered *C. decidua* fruit used in antidiabetic therapy reduced in the kidney, heart, and erythrocytes, alloxan significantly increased lipid peroxidation. Treatment with *C. decidua* reduces the lipid peroxidation caused by alloxan and modifies the superoxide dismutase and catalase enzymes to lessen oxidative stress.[36]

Antihypertensive Activity

A dose-dependent decrease in systolic, diastolic, and mean blood pressure was brought on in anaesthetized rats by an ethanolic extract of *C. decidua*. Overall, it is rational to conclude that the alcoholic extract of *C. decidua* has non-specific relaxant effects on smooth and cardiac muscle tissue, and that this action is likely what causes its hypotensive and bradycardic actions.[37]

RESULT

Ripened Fruit contains: So many nutrients like Carbohydrate (71%), Protein (15-18%), Fat (5%), Crude Fibre (1%), Ca (20%), P (360%), Zn (4%), Fe (6%), Mn (2%), β-Carotene (14%) Ripened fruit dried:Crude protein (14.94%), Total carbohydrate (73.48%), Soluble carbohydrate, Moisture, Phosphorus, Magnesium, Iron, Zinc, Copper, Sodium, Calcium, Starch, Crude fibre, Crude fat. From this review it is found that *C. decidua* has so many pharmacological properties like Sedative and anticonvulsant effects, Anti-diabetic activity, Hypo-cholesterol emic effect, Antioxidant activity, Antihypertensive Activity etc

DISCUSSION

From the recent research studies, it is fond that *C. decidua* possess many pharmacological properties and it is a nutritious shrub. so, this plant must be considered as a cheaper, medicinal cum nutritional source in public domain widely and *ayurvedic* medical system must evaluate it as the disease and nutritional deficiencies preventive *Aahar*.

CONCLUSION

In Rajasthan and other places, *C. decidua* (*Karir*) has shown to be a plant with significant commercial value. It offers numerous dietary and medical applications. *C. decidua* is a valuable and abundant source that may be used in food preparation. Several significant pharmacological research on *C. decidua* are compiled in the current review. It is more widely available and a cheap source of bioactive ingredients. *Ayurveda* also makes reference to it and there is evidence of modern research demonstrating its therapeutic value. Different chemical compounds have been discovered and separated from various *C. decidua* sections, but no research has been done to determine whether *C. decidua* extracts include any toxic or anti-nutritional chemicals. A variety of dietary supplements could be created for use.

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Table 1 Phyto-chemical properties

Name	***Botanical Name***	***Rasa***	***Guna***	***Virya***	***Vipaka***
Karir	*Capparis decidua (Forssk.)*	*Katu, Tikata*	*Laghu, Ruksha*	*Usna*	*Katu*

Table 2: Nutritional Value of Plant and Fruit

Plant part	Nutritional content	References
Seed	Oil (20%) Crude protein Total lipids Total carbohydrate Crude fiber Essential Amino acids: Arginine Histidine Isoleucine Leucine Lysine Methionine Phenylalanine Tryptophan Valine Threonine Essential fatty acids: Linoleic acid Linolenic acid Arachidonic acid	[16] [17]
Flower	Oil (14%) Sugar, Protein	[18]
Ripened Fruit	Carbohydrate (71%) Protein (15-18%) Fat (5%) Crude Fiber (1%) Ca (20%) P (360%) Zn (4%) Fe (6%) Mn (2%) β-Carotene (14%)	[19]
Ripened fruit dried	Crude protein (14.94 %) Total carbohydrate (73.48 %) Soluble carbohydrate Moisture Phosphorus Magnesium Iron Zinc Copper Sodium Calcium Starch Crude fiber Crude fat	[3]

Table 3: Pharmaceutical/Therapeutic Potential of Different Caper Parts

Parts	Disease	References
Stem barks	Toothache, cough, asthma, intermittent fever, rheumatism, inflammation, kidney infection, and treatment of wounds as pultise	[20;21;22; 23]
Fruits and Flowers	Diabetes, respiratory diseases, skin, anthelmintic, diuretic, cardiac and biliousness diseases, anti-diabetic and eyesight smoothing properties, laxative potential, atherosclerosis, and plaque.	[24; 25; 26;27;]
Roots	Digestive diseases, stimulant, anodyne, sudorific, constipation, lumbago, odontalgia, and amenorrhea	[28]
Root bark	Gout, cough, flu, dropsy, palsy, asthma, and intestinal worms	[29]
Leaves	Toothache, swellings, and blisters	[30]