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Portulaca oleracea (*Khurfa*): A comprehensive review of its therapeutic potential in Unani Medicine

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ABSTRACT
Portulaca oleracea, commonly known as *Khurfa* in Unani medicine, is a widely used medicinal plant recognized for its diverse therapeutic applications. This review aims to bridge traditional Unani understanding with contemporary scientific validation. Drawing from classical Unani texts, the paper explores the Unani description like temperament (*mizaj*), pharmacological actions, indications, contraindications, correctives and dosage forms of *Khurfa*. The review further presents an in-depth analysis of modern pharmacological studies, highlighting the antioxidant, anti-inflammatory, antimicrobial, neuroprotective, hepatoprotective, hypotensive antidiabetic, hypocholesteraemic and antifertility properties of Portulaca oleracea. A comparative evaluation reveals a strong alignment between traditional claims and modern findings, establishing the plant's continued relevance in integrative medicine.

Keywords: *Portulaca oleracea; Khurfa; Unani medicine; Mizaj; Traditional medicine; Scientific validation; Herbal pharmacology.*

INTRODUCTION

Portulaca oleracea L., commonly known as Purslane or *Khurfa*, belongs to the family Portulacaceae. It is considered a weed in many countries but has been esteemed as a medicinal herb for centuries in systems like Unani medicine, Ayurveda, and Traditional Chinese Medicine. In Unani medicine, *Khurfa* is used as single drugs as well as used in compound formulations for broad therapeutic efficacy. This medicinal plant possesses various pharmacological action and hence medicinal uses are numerous.

UNANI DESCRIPTION

A genus of succulent herbs distributed in the warmer parts of the world, found throughout in India, ascending up to an altitude of 1500 meters in the Himalayas. Purslane is cultivated as a vegetable in the plains from March to June and in the hills from middle of April to the middle of September. It has an acidic taste and a potent herb used as a cooling external application; it is also consumed as salad and employed in soups. Two varieties are distinguished the large and small. Both kinds are said to be cold and moist and to have detergent and astringent properties[1].

Parts Used: In Unani medicine seeds and leaves are used.

***Mizaj* (Temperament):** According to Unani texts, the temperament of *Khurfa* is described as "*Barid ratab*" (cold and wet) in the second degree [2,3,4].

Pharmacological Actions: *Mubarrid* (coolant), *Musakkine safra*, *Mudire bol* (Diuretics), *Muhallil-e-Waram* (anti-inflammatory), *Daafi-e-Humma* (antipyretic), *Musaffi-e-Dam* (blood purifier), Hemostyptic, *Dafa-e-Tashannuj* (antispasmodic), *Mulayyin* (mild *laxative)*[2].

Medicinal Uses: Useful in excessive heat conditions (*hararat*), Effective in fever, Useful in headache, Effective in skin diseases and boils, applied in cases of inflammation and burning micturition, Effective in diabetes, Effective in headache, Used in gastrointestinal disturbances and hepatic inflammations[5,6].

Dosage Forms: Decoction, Paste, Fresh juice, Powder [3]

Dose: 5-7 gm[2,3,4].

Toxicity

- Decreases spermatogenesis and causes sexual disability
- Excessive use of *Sheera Khurfa* causes excess production of *Balgham*

Correctives[2,3,4].

- *Qande safaid*
- *Sikanjabeen*

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Substitutes[2,3,4].
- *Tukhme Kahu*
- *Aspghol*
- *Bartang*

Compound formulation[2,3,4].
- *Mufarrehe barid sada*
- *Banadiqul buzoor*

Phytochemical Constituents: Modern studies have identified the presence of flavonoids, alkaloids, omega-3 fatty acids, vitamins (especially A, C, and E), glutathione, and betalains in Portulaca oleracea. These compounds contribute to its pharmacological potential[7,8].

SCIENTIFIC VALIDATION OF THERAPEUTIC CLAIMS

Recent scientific investigations have provided strong support to the traditional claims regarding Portulaca oleracea (Khurfa) as described in Unani medicine. A number of in vitro, in vivo, and a few clinical studies have highlighted its wide-ranging pharmacological actions.

Antioxidant Activity:
One of the most remarkable findings is its antioxidant property, which has been attributed to its high content of flavonoids, phenolic compounds, and vitamins like ascorbic acid and β-carotene. These compounds scavenge free radicals and reduce oxidative stress, which plays a central role in the prevention and management of chronic inflammatory diseases. Zhou *et al*., demonstrated that methanolic extract of P. oleracea exhibited significant DPPH and ABTS radical scavenging activity in both in vitro and in vivo models. This directly supports the Unani concept of *Musaffi-e-Dam* (blood purifier) and its application in conditions associated with humoral imbalance and toxaemia[9].

Anti-inflammatory and Antipyretic Effects:
The plant has also shown promising anti-inflammatory and antipyretic effects, observed in animal models where extracts of P. oleracea significantly reduced carrageenan-induced paw edema and fever. The reduction in inflammatory mediators such as prostaglandins and cytokines explains its traditional application in fevers and inflammatory skin disorders. This validates the Unani use of *Khurfa* as *Daafi'-i-Humma* (antipyretic) and *Mubarrid* (cooling)[10,11].

Antimicrobial Action:
Antimicrobial effect: Aqueous and ether extracts of the herb showed activity against gram-negative bacteria. The antifungal activity of P. oleracea extracts against hyphal growth of various fungi was evaluated in real time using an automatic single-cell bioassay system. The antifungal activity of each fraction of P. oleracea was evaluated based on the dynamic hyphal growth response curves of test fungi Aspergillus and Trichophyton and the yeast Candida. A crude sample obtained by ethyl acetate extract showed a specific and marked activity against dermatophytes of the genera Trichophyton[12].

Antidiabetic Effects:
Its antidiabetic activity has been investigated in both animal and human studies. In streptozotocin-induced diabetic rats, ethanolic and aqueous extracts of P. oleracea led to a significant reduction in fasting blood glucose levels, possibly due to insulin sensitization and α-glucosidase inhibition[13]. These findings align with the Unani use of cooling and detoxifying agents in diseases characterized by internal heat and dryness, such as diabetes.

The hypotensive Effect:
Hypotensive activity of ethanol (95%) and water extract of leaves and stems, administered intravenously to dogs at dose of 0.1ml/kg showed significant activity[14].

Hepatoprotective Effect:
Intraperitoneal administration of CCl4 causes liver injury in rats, which notably increases the total bilirubin levels and serum hepatic marker enzymes, including glutamate pyruvate transaminase (GPT) and glutamate oxaloacetate transaminase (GOT). A 70% alcohol extract of Portulaca oleracea significantly reverses the increased in hepatic marker enzymes and total bilirubin level which conforms the hepatoprotective activity of this plant[15].

Hypochloresterolemic Effects: Ahmed and his coworkers carried out investigation of hydroalcoholic extract of P Oleracea leaves on serum lipids of rabbits fed with hyperchloresteromic diet. Different groups of animals were fed with diet enriched in cholesterol (0.5%). P. oleracea extract (200, 400, 800 mg/kg body weight) orally for 12 weeks was administered to hyperchloresterolemic animals. It was found out that serum total cholesterol and atherogenic index

decreased in all groups treated with P. oleracea extract with respect to positive control group thus indicating that plant may be useful for treatment of hypercholesterolemia[16].

Gastric Antiulcerogenic Activity: Aqueous and ethanolic extracts of P. oleracea were studied in mice for their ability to inhibit gastric lesions induced by HCl or absolute ethanol. In addition, their effects on gastric acid secretion were measured. Both extracts showed a dose-dependent reduction in severity of ulcers. The highest dose of extracts exerted similar activity to sucralfate. The oral and intraperitoneal administration of extracts reduced the gastric acidity in pylorus-ligated mice. These results suggested that P. oleracea has gastroprotective action and validates its use in folk medicine for gastrointestinal diseases[17].

Anti-fertility effect:
The antifertility effects of alcoholic extract of P. oleracea seeds were observed on the reproductive organs of male albino mice after subcutaneous (s.c) administrations of 15, 20 and 30 doses (1 dose=50 mg/mouse per alternate day). The treatment produced mass atrophy of spermatogenic elements. Epididymal lumina were devoid of spermatozoa or contained debris. Treatment led to significant decrease in absolute weights of testes, epididymides, vas deferens and seminal vesicles. Administration of 30 doses produced a significant decrease in protein content and sialic acid of testes, epididymides and seminal vesicles remained unaltered after 30 doses while it was drastically reduced in testes. The administration (s.c.) of alcoholic extract of P. oleracea seed induced an effective impairment of spermatogenesis scientific study prove the Unani claim in decreasing the spermatogenesis[18].

Neuroprotective and Anticonvulsant Properties:
Another key pharmacological action is its neuroprotective and anticonvulsant potential. In animal models, P. oleracea extracts delayed the onset and reduced the severity of chemically induced seizures, showing effects comparable to standard anticonvulsants[19]. This supports its Unani use in *Sara* (epilepsy) and *Tashannuj* (convulsions), where calming and moistening herbs are preferred.

DISCUSSION
The review establishes a remarkable correlation between classical Unani knowledge and contemporary pharmacological research. The *Mizaj*, function, and medicinal indications and contraindication described in Unani texts are increasingly validated by scientific findings. This integrative understanding underscores the need for further research and clinical validation, potentially leading to broader acceptance in mainstream medicine.

CONCLUSION
Portulaca oleracea exemplifies how traditional knowledge can find scientific support through modern research. Its wide therapeutic spectrum, validated by both Unani practice and scientific studies, warrants its inclusion in evidence-based integrative medicine. Future studies focusing on standardization, toxicity, dosage, and clinical efficacy can further promote its global application.

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