

Unlocking the Health Benefits of Purslane: A Nutritional Powerhouse and Miraculous Medicinal Source

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Summary

Purslane, a summer vegetable, is a nutritional powerhouse packed with essential vitamins, minerals, omega-3 fatty acids, and antioxidant-rich phytochemicals. It offers various medicinal benefits, including antioxidants, antimicrobials, anti-inflammatory properties, potential anticancer effects, etc. However, caution is needed for individuals with kidney disease or high uric acid levels, and its safety during pregnancy is uncertain. Clinical studies support its health benefits, especially for asthma and diabetes, making it valuable for heart health. Further research on its herbal applications, especially concerning nervous system conditions, is essential. Adding purslane to diets enhances overall health.

Introduction

Portulaca oleracea L., commonly known as purslane or portulaca, is a versatile and underappreciated herb that has been consumed for its exceptional nutritional and medicinal properties. This low-growing succulent annual herb belongs to the Portulacaceae family and is renowned for its adaptability, thriving in both cultivated and undisturbed lands. Purslane has been a popular summer annual crop and a beloved vegetable worldwide. Beyond its culinary appeal, this herb stands out due to its rich composition of biologically active compounds, making it a powerhouse of health benefits.

Nutritional Powerhouse

Purslane is not only a delicious summer annual vegetable but also a nutritional powerhouse. It boasts an impressive array of nutritional benefits, making it a valuable addition

to a balanced diet. Its nutritional profile includes essential vitamins such as retinol (Vitamin A), thiamine (B1), riboflavin (B2), pyridoxine (B6), niacin (B3), folate (B9), pantothenic acid (B5), ascorbic acid (C), alpha-tocopherol, and minerals like phosphorous, calcium, potassium, magnesium, iron, manganese, copper, zinc, selenium, and other compounds, namely beta-carotene, portulacerebroside A, melatonin, and glutathione. Additionally, it contains essential amino acids like alanine, catechol, and organic acids (linoleic acid, linolenic acid, oleic acid, palmitic acid, stearic acid, oxalic acid, p-coumaric acid, and ferulic acid), cinnamic acids, caffeic acid, malic acid, and citric acid. One of the most outstanding features of purslane is its exceptionally high content of omega-3 fatty acids, particularly alpha-linolenic acid. Omega-3 fatty acids are essential for human growth, development, immune system support, and disease prevention. Purslane contains five times more omega-3 fatty acids than spinach, making it a remarkable dietary choice for individuals seeking to maintain optimal heart health and immune function (Rahimi *et al.*, 2019).

Phytochemicals Galore

Purslane's wealth extends beyond just vitamins and minerals. It's also packed with an impressive array of phytochemicals, including flavonoids like portulacanone A-D, apigenin, kaempferol, quercetin, luteolin, myricetin, genistein, and genistin. These compounds contribute to its antioxidant properties, helping to protect the body from oxidative stress and reduce the risk of chronic diseases. Furthermore, purslane also contains other phytochemicals, including alkaloids (N-trans-Feruloyltyramine, dopamine, dihydroxyphenylalanine, noradrenalin, oleraceins A-E and adenosine), terpenoids (portulosides A-B, lupeol, portulene, and friedelane), coumarins, anthraquinone glycosides, cardiac glycosides, and betacyanins. These compounds have diverse pharmacological effects, ranging from anti-inflammatory and antimicrobial to antioxidant properties (Zhou *et al.*, 2015; Rahimi *et al.*, 2019).

Medicinal Marvels

Portulaca oleracea has been the subject of extensive research, revealing its vast pharmacological potential and uncovering a wide range of medicinal applications. Studies on this versatile plant have demonstrated various health benefits and therapeutic properties (Sultana & Rahman, 2013; Rahimi *et al.*, 2019 and Kumar *et al.*, 2022), including:

- ✓ **Muscle relaxation:** Purslane extracts exhibit muscle relaxation and reduce locomotor activity, making them useful for reducing muscle tension and delaying the onset of

convulsions, suggesting potential applications in the management of conditions such as epilepsy.

- ✓ **Antimicrobial effects:** Purslane extracts exhibit significant antimicrobial activity against various pathogens, including bacteria and fungi, underscoring their role in promoting a healthy immune system.
- ✓ **Antitussive and bronchodilator effects:** Purslane's extracts have demonstrated the ability to alleviate coughs and act as a bronchodilator, which can be particularly beneficial for respiratory health.
- ✓ **Antioxidant activity:** Purslane's potent antioxidant properties help combat free radicals, reduce oxidative stress, and protect against a variety of diseases. This is attributed to its rich reservoir of omega-3 fatty acids and antioxidant vitamins.
- ✓ **Hepatoprotective benefits:** Purslane has shown potential for preventing oxidative stress and toxicity-induced liver damage. Consuming purslane seeds alongside a low-calorie diet resulted in a notable reduction in fasting blood sugar levels, suggesting its ability to support normal liver function.
- ✓ **Nephroprotective effects:** Purslane extracts have been found to protect the kidneys from damage, potentially benefiting those with renal issues.
- ✓ **Antidiabetic potential:** Purslane has shown promise in lowering blood glucose levels and improving insulin sensitivity, making it a valuable resource in the management of diabetes.
- ✓ **Wound healing:** Studies suggest that purslane may expedite the wound healing process, reducing the surface area of wounds and increasing tensile strength.
- ✓ **Antiulcer activity:** Purslane has exhibited gastroprotective effects by inhibiting gastric ulcers induced by various factors. prevent gastric ulcers induced by various factors and protect the gastric mucosa from oxidative damage.
- ✓ **Anti-inflammatory effects:** Purslane extracts have shown anti-inflammatory activity, which can help mitigate inflammation-related conditions and alleviate discomfort.
- ✓ **Anticancer potential:** Some of purslane's bioactive compounds, including alkaloids, homoisoflavonoids, polysaccharides, and cerebrosides, have cytotoxic effects on different types of cancer cells. These compounds have shown potential in the treatment of several cancer forms.

Purslane is a generally safe and nutritious plant for most people. However, individuals with kidney disease or high uric acid should avoid it due to its oxalic acid content (Wang *et al.*, 2023). Its safety during pregnancy and lactation remains unestablished (Gardner & McGuffin, 2013).

Clinical Findings and Future Prospects

Purslane health benefits have been confirmed in clinical studies, including bronchodilatory effects for asthma patients (Malek *et al.*, 2004), blood glucose reduction, improved lipid profiles (Hadi *et al.*, 2019), and potential heart health benefits for type 2 diabetes patients (El-Sayed MI, 2011). It also shows promise in reducing heart disease risk through its hypolipidemic effects (Jafari *et al.*, 2023). However, additional research is required to ascertain the safety and efficacy of herbal remedies like purslane, especially for nervous system conditions. Investigating multi-component purslane mixtures using various techniques is essential. Exercise caution when using traditional purslane formulations until comprehensive toxicity studies are available. These findings could expand Purslane's medicinal applications in modern medicine.

Conclusion

Portulaca oleracea is a true botanical treasure, offering a plethora of health benefits, an array of medicinal properties, and nutritional benefits. With its remarkable omega-3 fatty acid content and diverse phytochemical profile, this herb has rightfully earned its reputation as a “Global Panacea” in traditional medicine. The extensive research conducted on purslane underscores its potential to promote overall health and well-being. As we continue to explore its therapeutic potential, *Portulaca oleracea* remains a testament to the healing capability of the natural world. By incorporating purslane into our diets and exploring its medicinal applications, we can fully harness its potential for a healthier and more vibrant life.

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