

# Purslane - A Precious Medicinal Weed

Janaki Subramanyan

Department of Botany, Miranda House, University of Delhi, Delhi 110007

E-mail: [janaki.subramanyan@mirandahouse.ac.in](mailto:janaki.subramanyan@mirandahouse.ac.in)

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**Abstract**—Purslane (*Portulaca oleracea* L.), is a widely distributed common annual herbaceous weed found in a variety of soils and waste lands. The herb is used as a leaf vegetable; consumed raw in salads, stir fried or cooked. The plant is rich in vitamins A, B, C and E; and minerals. Purslane contains the omega-3 fatty acid alpha-linolenic acid (ALA). The amount of ALA is higher than that in some fishes.

Owing to its numerous medicinal properties purslane has been used in traditional and folk medicine. Presence of betalains, glutathione and phenolic alkaloids gives purslane antioxidant properties. The World Health Organization has included purslane in the list of most widely used medicinal plants. Being rich in oxalate purslane can cause kidney stones when consumed in large amounts, and prove fatal to animals grazing heavily on the plant.

The short growing season, the ability to spread quickly, and the deep strong taproot make purslane suitable as a ground cover and companion planting along with other crops such as maize. Being an easy-to-grow nutritious edible herb with medicinal value, and its role in soil amelioration, the growing of purslane is recommended in waste lands, crop fields, orchards and kitchen gardens. A concerted effort to raise germplasm collections will certainly help in furthering research on the improvement of purslane which in turn would help in popularizing cultivation of the plant.

## 1. INTRODUCTION

Purslane (*Portulaca oleracea* L.), also called parsley, pursley, pusley, little hogweed, pigweed, or verdolaga, and *kulfa* in Hindi, belongs to the family Portulacaceae of the order Caryophyllales. It is an annual prolific herb reaching up to 40 cm in height and pantropical in distribution. Purslane is salt and drought tolerant and can grow on a wide range of soils including waste lands. The plant name *Portulaca* is derived from the Latin word *portula*, which means a diminutive porta or gate, referring to the covering of the seed capsule that opens like a small gate.

The taproot is deep and helps loosen compact soils. The stem is succulent and glabrous, decumbent or prostrate and branched. Leaves are simple, subopposite or alternate, uppermost leaves are usually clustered, spatulate-obovate to oblong, and sessile to subsessile. The inflorescence is axillary or terminal, and the flowers are complete, bisexual and yellow. The fruit is a globose-ovoid capsule dehiscing transversely in the middle containing many reniform to globose black seeds. Being a CAM (Crassulacean Acid

Metabolism) plant, purslane shows efficient photosynthesis even at high light intensities and temperatures.

Diploid, tetraploid and hexaploid populations exist, having  $2n = 18, 36$  and  $54$  chromosomes, respectively. *P. oleracea* subspecies *sativa* (Haw) Schubl. & Mart., a hexaploid, is most commonly cultivated. Nearly 40 cultivars of purslane are currently grown.

## 2. A LEAF VEGETABLE

Various preparations are made using purslane. The stem, leaves, flowers, fruits and seeds are edible. The pot herb is consumed raw in salads and can be used as a substitute of lettuce in sandwiches. It can be stir fried or cooked and consumed. The herb is cooked as such, with other leaf vegetables like spinach or with lentils. The sourness is mainly because of malic acid. Harvesting in the early morning gives more tanginess to the herb than when harvested in the late afternoon. The mucilaginous nature of the plant makes it suited for preparing soups and stews. In Turkey purslane is baked in pastries. The flour prepared from the seed can be mixed with cereals in gruels, bread and pancakes. The ancient Greeks prepared a bread from the ground seeds. Australian Aborigines use the seeds to make seedcakes. Purslane can be pickled as well.

## 3. HARVESTING

Purslane completes its life cycle in 2 to 4 months. Harvesting is initiated 3 to 4 weeks from sowing and 2 or 3 cuts at intervals of 2 to 3 weeks are carried out in commercial plantations. The harvest can be stored in plastic boxes for 2 to 6 days at  $0$  to  $1^{\circ}\text{C}$  and high relative humidity.

## 4. NUTRITIVE VALUE

Purslane is a leaf vegetable rich in vitamins A, B, C and E; in the minerals iron, magnesium, manganese, potassium, phosphorus, and zinc. The amount of omega-3 fatty acid alpha-linolenic acid (ALA) is highest among leaf vegetables and exceeds that in many fishes. Additionally, eicosapentaenoic acid (EPA), another omega-3 fatty acid is present. Omega-3 fatty acids are essential fatty acids because our body cannot synthesize these fatty acids. We need to get

omega-3 fatty acids from our food. Omega-3 fatty acids are important for brain development and function, and decrease inflammation and may help lower the risk of heart disease, cancer, and arthritis. Betalaines, glutathione and phenolic alkaloids impart antioxidant properties. Glutathione also helps in boosting the immunity. Pectin present in purslane helps in lowering the cholesterol levels. Because of the high oxalate and nitrate content consumption of large amounts of purslane may cause kidney stones. Boiling the herb followed by discarding the water removes the soluble oxalate considerably. The presence of cardiac glycosides can cause toxicity.

## 5. MEDICINAL PROPERTIES

The herb has several medicinal properties, namely antibacterial, antifungal, antiviral, antipyretic, antidiabetic, antiscorbutic, antiseptic, astringent, depurative, diuretic, hepatoprotective, hypotensive, myorelaxant and vermifuge properties. That is why purslane has been used in the traditional systems of medicine Ayurveda, Unani and Siddha, and in folk medicine. Marma Gulika is an Ayurvedic medicine that contains purslane. Presence of high potassium levels gives purslane a diuretic action. The leaves are used to cure sores, boils, insect bites, postpartum bleeding, and snake bites. The seed powder is used to expel intestinal worms. The herb is a cardiogenic as well.

## 6. CONCLUSIONS

Because of the cosmopolitan distribution, high genetic variability as well as flexibility it is very necessary that the germplasm from different countries is collected and used in crop improvement. Attempts can also be aimed at lowering the oxalate content by genetic engineering. Purslane is a medicinal plant with a diverse pharmacological spectrum. Standardization of the extraction and purification procedures of the valuable phytoconstituents would be a major step in using purslane in safer and affordable medical formulations. *P. quadrifida* (2n = 48) which is also edible and has medicinal properties similar to *P. oleracea* can be cultivated as well. Purslane is an underutilized precious plant whose large-scale cultivation should be promoted. Keeping in view that purslane is a nutritious edible beneficial weed with medicinal value that also helps in soil amelioration, the growing of purslane is recommended in waste lands, and in crop fields and orchards as a ground cover and a companion planting. Purslane can be easily grown in kitchen gardens as well.

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