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PURSLANE: A UBIQUITOUS GARDEN WEED WITH NUTRITIONAL POTENTIAL

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Portulaca (purslane) from the family Portulacaceae, which consists of about 16 genera and about 500 species (11), contains over 100 species of low (about 1 foot high), fleshy and often trailing, mostly annual herbs, with reddish stems (2). Its spatulate leaves, approximately 1/2 to 1-1/2 inches or less, are alternate, thick, sometimes cylindrical; the upper forming a leafy involucre subtending the often showy and variously colored flowers, usually with five distinct petals and with several to many stamens (2). The flowers open in direct sunshine but close in shade (2). The fruit

is a round capsule 1/8 inch long, containing many small black seeds. A characteristic of the seed capsule is its transverse dehiscence, the top coming away as a little cap (17).

The names are legion: The most graphic are those used in Malawi, all of which mean the same, namely "the buttocks of the wife of a chief"—from the shape of the leaf (8).

Purslane is a succulent herb, found as a weed throughout the tropical and subtropical regions. In the United States, it is most abundant in the Northeastern states: However, in Florida this disease resistant plant flourishes throughout the state—in hammocks, pinelands, sandy fields and cultivated ground (9). *Portulaca grandiflora* is a common ornamental ground cover grown in Florida. Its thick, succulent leaves and roots enable it to withstand hot and dry weather. Because of its high tolerance for different light intensities, temperature ranges, and soil types, purslane, a prolific seed producer, can become a serious weed pest in vegetable fields and ornamental nurseries.

Whether an abundant weed or common pot-herb obtained from plants which come up in cultivated and waste ground (4), purslane is, nevertheless, a highly nutritional vegetable for both animal (fodder) and human consump-

tion. The plant has been a vegetable from time immemorial; it appears to be mentioned in Egyptian texts of the time of the pharaohs (4).

Its young shoots and leaves can be eaten either raw in salads or cooked as a sauce, in soups, or as greens. In the Journal of the New York Botanical Gardens for 1942, occur these sentences: "In my opinion these young leaves and stems when cooked about 15 minutes in boiling salted water are far better than spinach or swiss chard. Their flavour is more delicate, being not unlike that of beet greens" (8). Purslane is collected in the wild and eaten in many countries—China, the Philippines, Java, Malaya, Eastern and Central Africa, Greece, as well as the Mediterranean region and S. E. Asia—and listed in English seed catalogues (8). Additionally, the American Indians and aborigines in other countries grind the tiny seeds into flour for use as mush and bread.

From a scientific standpoint, purslane provides a rich plant source of nutritional benefits. First, purslane (*P. ole-racea*) is one of the richest green plant sources of omega-3 fatty acids which lower the cholesterol and triglyceride levels, raise the beneficial high density lipoprotein (6), and decrease the stickiness of the blood by decreasing platelet aggregation (15), all of which may retard hardening of the arteries. Moreover, the ability of omega-3 fatty acids to decrease the thickness of the blood may be advantageous in the treatment of vascular diseases (18): Unlike fish oils with their high cholesterol and calorie content, purslane provides an excellent source for the beneficial omega-3 fatty acids without the cholesterol of fish oils, since, like most plant oils, it contains no cholesterol. There are 3 varieties of purslane—a green, a golden, and a large-leaved golden variety (7). The concentration of omega-3 fatty acids and other nutrients in the different varieties is not published to date. Important sources of omega-3 fatty acids are summarized in Table 1. It has been reported that in geographic areas where this "weed" is eaten, there is a low incidence of cancer and heart disease, possibly due in part to purslane's naturally occurring omega-3 fatty acids (13).

Conjointly with its rich content of omega-3 fatty acids, purslane, like other wild greens—amaranth, dandelion, dock, and lambsquarters—is a valuable source of beta-carotene (16)—a known cancer inhibitor (12). Beta-carotene levels in brain and blood correlate with mammalian life-span (5). Although high in carbohydrate, purslane is low in fat and protein content—a beneficial ratio of food nutrients.

A fair source of vitamin C, iron, fiber and calcium can also be found in this vegetable weed. Table 2 summarizes the relative nutritional values.

From a medicinal standpoint, purslane has been used since the earliest times: In ancient Greece, it was used as a cathartic, for treatment of parasites, and the prevention of scurvy. Chinese herbalists, on the other hand, used purslane as a folk remedy—as a poultice, applied to wounds, burns, and ulcers; as a diuretic; and as a laxative.

In modern times, Ridley records its use as an aperient (4). He also states that the juice may be dropped into the eye for eye diseases (4). Guerrero calls it a diuretic. Bartlett states that in Sumatra, it is used for chest complaints (4); in the Philippines it is used for poulticing burns and skin diseases (4) and in Java the seeds are considered to be a

Table 1. Plant sources of omega-3 fatty acids (3).

Food	Omega-3 Fatty Acids (g/100 g)
<u>Low</u>	
Avocados, California, raw	0.1
Broccoli	0.1
Strawberries	0.1
Cauliflower, raw	0.1
Kale, raw	0.2
Spinach, raw	0.1
Peas, garden dry	0.2
Cowpeas, dry	0.3
Beans, navy, sprouted, cooked	0.3
Corn, germ	0.3
<u>Medium</u>	
Bean, common dry	0.6
Leeks, freeze-dried, raw	0.7
Wheat, germ	0.7
Spirulina, dried	0.8
Purslane	0.9
Oat, germ	1.4
Beachnuts	1.7
Soybeans kernels, roasted	1.5
Soybeans, green	3.2
<u>High</u>	
Soybean oil	6.8
Walnuts, Persian, English	6.8
Wheat germ oil	6.8
Butternuts	8.7
Walnut oil	10.4
Rapeseed oil (New Puritan Oil)	11.1

Preparation	Cal.	gm. Prot.	gm. Fat	gm. Carb.	gm. Fiber	Total I.U.		mg. Calc.	mg. Iron
						Vit. A	Vit. C		
Raw	21	1.7	0.4	3.8	0.9	2500	25	103	3.5
Boil (Drained)	15	1.2	0.3	2.8	0.8	2100	12	86	1.2

vermifuge (4). Additionally, Edward S. Ayensu records the following purported medicinal uses of purslane: for skin diseases, as an antiscorbutic, as a heart tonic, as a remedy for syphilis (1); boiled leaves as a plaster or poultice to ease backache or painful menstruation (1); in herb tea for intestinal worms, palpitations, and empacho (1). The plant extract has levarterenal, raising blood pressure and lowering heart rate (1).

Nevertheless, K. D. Perkins and W. W. Payne advise that under certain conditions, purslane can gather up large quantities of oxalates (10). Although not a problem in North America, the accumulation of oxalates can render the entire plant toxic. The oxalate content, however, can be reduced by boiling and then discarding the cooking water (14).

As few as 10 years ago, an analysis of purslane would have recorded it as a weed, common-pot herb, possessing unusual medicinal qualities for folklore purposes. Scientific analysis of its chemical components have shown that this common weed has uncommon nutritional value, making it one of the potentially more important foods for the future.

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