

Medicinal Properties of Watermelon Seeds (*Citrullus lanatus*)

Badri Lal Nagar¹ and Homeshvari²

Abstract:

Herbal products are significant on a global scale due to their low side effects, accessibility, and cost. Famous in the indigenous folk medical system, water melon is also known to contain bioactive substances such triterpenes, sterols, vitamins, cucurbitacin, and minerals. Fruit has been utilized as a blood purifier, aphrodisiac, cooling agent, and strengthener. Seeds of *Citrullus lanatus* are highly nutrient-dense; they have a good amount of fat, protein and vitamins and minerals. The seeds are ground into flour, used to make sauces, and used to cook snakes. The seeds are used to treat kidney stones, bedwetting, urinary tract infections and dropsy.

Introduction:

The fruit crop watermelon (*Citrullus lanatus*) is an herbaceous creeping plant that is a member of the cucurbitaceae family. It spreads primarily by seeds and prefers warm climates to flourish. Being a tropical plant, its ideal growing conditions include plenty of sunshine and temperatures over 25°C. The ideal soil for watermelon growth is one that is well-drained, rich and somewhat acidic. It can be grown in Ghana's coastal regions, in the forested areas and particularly by the riverbeds in the Northern Savannah regions. The term "water" melon comes from the fruit of *Citrullus lanatus*, which is around 93% water. The fruit's huge, spherical shape and delicious, pulpy flesh gave rise to the term "melon." There are Latin and Greek roots to the

watermelon's scientific name. The term "citrus" in Greek refers to the fruit, hence the name *Citrullus*. The Latin word "*lanatus*" which refers to the tiny hairs on the plant's stems and leaves, means "wooly." You can use watermelon as a fresh salad, dessert, snack, and garnish. The juice can also be used to make drinks. For many watermelon types, the sugar content and sweetness are the most important elements in determining quality. It is well known to be extremely nutrient-dense, low in calories, and thirst-quenching.

Botanical Description

Kingdom	Plantae
Order	Cucurbitales
Family	Cucurbitaceae
Genus	<i>Citrullus</i>
Species	<i>lanatus</i>
Botanical Name	<i>Citrullus lanatus</i>

Badri Lal Nagar¹ and Homeshvari²

¹Ph.D. Scholar, Department of Vegetable Science, Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya Gwalior, M.P.

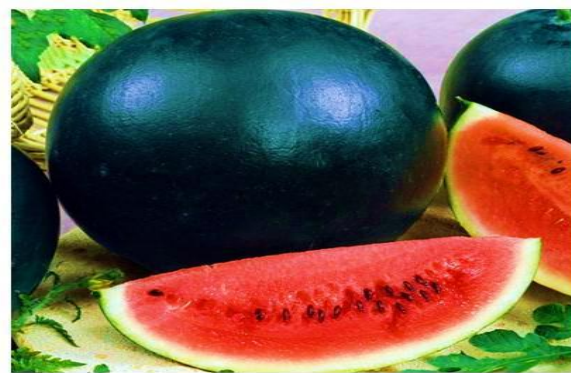
²Ph.D. Scholar, Department of Horticulture (Fruit Science), College of Agriculture, J.N.K.V.V., Jabalpur, M.P.

Indian local name- Sanskrit - Kharabuja, Bengali - Tormuj, Hindi - Tarbooz, Gujrati - Indark, Marati - Kadu vrindavana Urdu - Tarbooz, Panjabi - tarabuuja, Tamil - palam, Telugu - puchakaya.

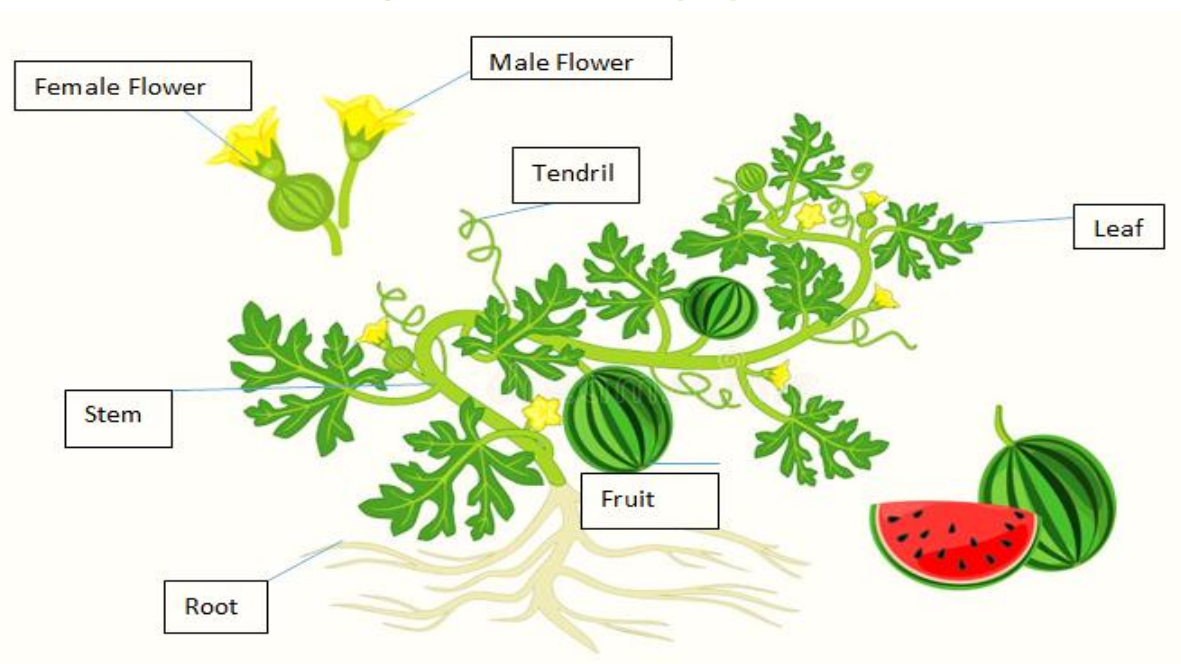
Plant discription

The herb watermelon is an annual. India and other warm countries are the primary places where it is grown. It lies on a bed of long, curling tendrils, big, hairy leaves and it is lying on ground with long steam (up to 10 m and 32.8ft).

Leaves have three to five lobes and are tough. The plant has a long, hairy flower stalk and both the male and female flowers are present on the same plant. It is monoecious. In its natural state, the fruit is 1.5-20 cm in diameter, malty, sub-globose, greenish and dark green in color, with a 50 mm fruit stalk. The pulp might be dark red (cultivar) or yellow or green (wild form). The seeds are flattened, oval and measure 9-12 x 5-mm. They can be yellow, drab brown, black or occasionally white.



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Nutritional values

Citrullus lanatus fruit contained approximately 6% sugar and 92% water by weight. It is an excellent source of vitamins A, B and C, which are needed for the synthesis of energy. It has a lot of vitamin C in it. Protein: 28.3g, fat: 47.4g, water: 5.1g, energy: 2340kJ (557kcal), carbohydrate: 15.3 g, calcium: 54 mg, phosphorus: 755 mg, iron: 7.3 mg, thiamin: 0.19 mg, riboflavin: 0.15 mg, niacin: 3.55 mg, and folate: 58 µg are the components of dried seed without shell per 100 g.

The seed oil was found to include stearic acid, oleic acid, palmitic acid and linoleic glycosides. Medicinal herbs are an excellent source of vitamins, minerals and antioxidants. They can be utilized to create a variety of food products, such as cookies, with higher nutritional contents, which can help fight degenerative diseases and meet dietary requirements.

Table 2: proximate contents of watermelon seed

Parameters	Values (%)
Moisture	6.4
Fat	47.1
Protein	68.4
Fiber	1.2
Ash	2.6
Carbohydrates	25.1

Use of water melon seeds in traditional way

Since before the arrival of European settlers, watermelon has been grown in

southern Africa alongside other crops like sorghum and maize. Young fruits and leaves are utilized as green vegetables and fruit flesh is cooked and combined with maize meal to make a porridge. The hollow fruit can be used as a container for berries and for cooking. Various recipes are prepared using pulp and seeds. More nutritious than the flesh, the flat brown seeds have a pleasant nutty flavor. They are an excellent source of fat, minerals and vitamin C. They can be consumed raw, roasted, or used to flour mixtures. According to a study, soups can be thickened with the pulp from the seeds. The fermented seeds are utilized to create a locally recognized sweetener called "ogiri" or they can be boiled along with leaves to create another sweetener known as "igbëlo." *Citrullus lanatus* seeds are utilized for their oil, and their application in the pharmaceutical and cosmetic industries is growing. Seeds are also utilized to promote baby nutrition because of their high protein and fat content.

Bioactivity of *Citrullus lanatus*

Anti-inflammatory activity

An investigation on the anti-inflammatory properties of *Citrullus lanatus* seed oil (CLSO) both in vitro and in vivo. The oil's in-vitro anti-inflammatory efficacy was assessed using human red blood cell membrane stabilization and carrageenan-induced paw edema in rat models. The typical dosage of diclofenac (10MG/kg) was used to

compare the potency of the oil. The rat paw edema model induced by carrageenan and oil showed a significant reduction in edema at the 3-hour mark (paw volume percentage reductions of 44.44%, 55.56%, and 63.11% for CLSO (50 mg/kg), CLSO (100 mg/kg) and diclofenec (10 mg/kg) respectively. At concentrations of 100, 250, and 500 mcg/ml, CLSO demonstrated 42.35%, 68.48%, and 78.50% protection of HRBC in hypotonic solution with respect to these concentrations.

(53.55%), free acidity (57.02%) and total acidity (36.53%). The antiulcer properties of the methanolic seed extract are dose-related, peaking at 800 mg/kg.

Anti- microbial activity

The antimicrobial activity of chlorofarmic, hexane, and ethanolic extracts of leaves, fruits, stems, and seeds from *Citrullus lanatus* var. *Citroides* (CL) has been demonstrated in a study against fungi (*Aspergillus nigar* and *Candida albican*) and

Table 1: Phytoconstituents of <i>Citrullus lanatus</i>	
	Constituents
Seeds	Lycopene, beta-carotene, xanthophylls, phenolics, vitamin C
	Protein-globulin, albumin, glutelin.
	Flavonoids, vitamin C, thiamine, riboflavin, polyphenolic compounds, Terpene, steroid, flavonoid.
	Glycoprotein-vicilin, 2-dodecyclobutanon, 2-tetradcylcyclobutanon, cellulose radicals.
	Crude protein, carbohydrate, amino acids- arginine, isoleucine, leucine. Mineral composition- Na, Ca, Mg
Seed oil	Total lipid content- oils- polyunsaturated fatty acids- oleic, lenoliec fatty acid
	High amount of higher fat acids- palmitic acid, stearic acid, linoleic acid. Higher amount is limoleic acid.
	Poor in linolenic acid, Saturated fatty acid. Unsaturated fatty acid- tocotrienols.

Anti- ulcer- activity

Crude methanolic extract of watermelon seeds was used to evaluate the ulcerogenic properties of two different ulcer models: pyloric ligation (PL, 4h ligation) and water immersion (WS, 25 oc for 3h) stress-induced ulcer model in albino Wistar rats. In the case of the pyloric ligation model, *Citrullus lantus* decreases the gastric volume

bacteria (*Escherichia coli*, *Staphylococcus aureus*, *Pseudomonas aureginosa*, *Bacillus subtilis*, and *Proteus vulgaris*). Using the disc diffusion method and cup-plate method, antimicrobial CL was investigated. The study's findings indicate that fruit extract in chloroform has the strongest antibacterial action. Antibacterial activity was shown against 36 mm of *S. aureus*, 38 mm of *B.*

subtilis, 37 mm of *E. coli*, 23 mm of *P. vulgaris* and 19 mm of *P. aeruginosa*. The ethanolic extract of the fruit pulp and stem on *C. albica* (41 m) exhibited the strongest antifungal activity. A nigar exhibited high sensitivity to both the 37 mm chloroform extract of the seed and the 37 mm ethanolic extract of the leaves. The antibacterial activity of *Citrullus lanatus* seed extract has also been researched and reported. They discovered that seed extracts against the chosen bacteria suggest that extracts made by Soxhlet extraction, cold maceration, and employing methanol and chloroform have the potential to be antibacterial agents, particularly against *P. aeruginosa* and *Staphylococcus* sp.

Anti-oxidant activity

Citrullus lanatus antioxidant activity in their investigation involved extracts from methanol, ethyl acetate, and chloroform. The antioxidant activity of all methanol, ethyl acetate, and chloroform extracts was measured using the DPPH technique. The highest level of antioxidant capacity demonstrated by *Citrullus lantus* (MECL) seed methanolic extract.

Hepatoprotective activity

Citrullus lanatus seeds were found to have a hepatoprotective effect against carbon tetrachloride-induced hepatotoxicity in rats, as demonstrated by measurements of serum hepatic enzyme levels and histopathological

analysis of liver tissue. Rats were given oral doses of *Citrullus lanatus* seed oil (125 mg, 250 mg, and 250 mg) for ten days. The effects of this treatment were compared to that of regular oral silymarin (100 mg/kg). As a result of CCl₄-induced liver damage, the treated groups' serum levels of ALT, AST, and ALP significantly decreased and were comparable to those of regular medication. *Citrullus lanatus* seed oil has been shown to have hepatoprotective properties through histopathological analysis of liver tissue.

Conclusion

According to this study, watermelon seeds are an excellent source of several nutrients, including vitamins and minerals that are necessary for maintaining our body weight. They are also a good supply of water, which has a cooling impact on our bodies. For ages, people have utilized watermelon seeds for their pharmacological properties, including their antibacterial, antifungal, antimicrobial, antiulcer and anti-inflammatory properties. When eaten raw or added to culinary items, these watermelon seeds have potential medical, financial and health benefits. However, there is a lot of need for research and little published material regarding the antioxidant and nutritional qualities of watermelon seeds.