
Medicinal Values of Watermelon (*Citrullus Lanatus*)

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Abstract

The use of herbal products is of global importance because of their low side effects, accessibility and affordability when compared with conventional medicine. *Citrullus lanatus* (water melon) is popular in indigenous system of folk medicine and it is known to contain bioactive compounds such as cucurbitacin, triterpenes, sterols and alkaloids, vitamins, minerals. Traditionally *Citrullus lanatus* had been reportedly used as purgative and emetic in high dose, vermifuge, demulcent, diuretic and tonic. The seed is used in the treatment of urinary tract infections, bedwetting, dropsy and renal stones, alcohol poisoning, hypertension, diabetic, diarrhoea and gonorrhoea. This review unveils the current experimental research on its biological activities which substantiate its ethno medicinal claims.

Keywords: Medicinal Value, Water, Melon, *Citrullus Lanatus*.

1. Introduction

Watermelon is a scrambling and trailing vine in the flowering plant family cucurbitaceae. The species originated in southern Africa, where there is evidence of its cultivation in ancient Egypt. It is grown in tropical and sub-tropical areas worldwide for its large edible fruit, also known as a watermelon, which is a special kind of berry with a hard rind and no internal division, botanically called a pepo (Jackson 1990). Watermelon is an important but under-utilized crop grown in tropical regions of the world. It is used for the production of juices, nectars, fruit cocktails etc. but generates waste in the form of rind and seed. The seeds are utilized directly for human consumption in various forms such as snacks in India, Arabian and African countries, as an additive in various dishes, for decorating cakes as an a stuffing in indigenous kheer. Melon seed are also used to thicken and emulsify soups and stews that provide protein in the diet. The seeds are also reported to possess medicinal properties and are used to treat chronic as acute enzyme (Robinson and Walter 1997).

Watermelon seeds have been reported to contain high levels of proteins and lipids, arginine stimulating acid, aspartic acid and leucine are the pre-dominant amino acids in watermelon protein. Watermelon grows well in alluvial and sandy soils even in arid regions and coastal saline areas. It has been reported that infectious diseases account for one half of all deaths in the tropical countries (WHO, 1977). As a result people of all and continent have long applied poultice and imbedded infusion of indigenous plants dating back to prehistory for health purpose and is still in use today (Sofowana 1993).

Plant medicine (phytoamedicine) has been used in health care delivery in many parts of African and the rest of the world (Elujoba 2005). Effective health cannot be active in Africa, unless orthodox medicine is complemented with traditional medicine (Elujoba 2005). At least 80% of African depends on plants medicine for their health care (Sofowora 1993). Fruits and vegetables have been recognized as natural sources of various bioactive compounds (Pennington and fishers 2010).

Which could be attribute to their psytoconstitution such as flavourides, anthocyanins, vitamins C. and E, phenolic compound, dietary fiber and carotenoid present in fruit vegetable (Aguilar 2008). One of such medicinal plant is watermelon. Although several of it uses in traditional medicine have been documented, many of these claims are yet to be validated by scientific researchers (Iwu 1983).

2. Literature Review

Origin and Botanical Description

Watermelon produces a fruit that is about 93% water, hence the name “water” melon. The “melon” part came from the fact that the fruit is large and round and has a sweet, pulpy flesh. The scientific name of the watermelon is derived from both Greek and Latin root (Fursa 1981). The *citrullus* part comes from a Greek word “citrus” which is a reference to the fruit. The *lanatus* part is Latin, and has the meaning of being wooly, referring to the small hairs on the stems and leaves of the plant (Baker, e t al. 2012).

Watermelon is thought to have originated in southern Africa because it is found growing wild throughout the area and reaches maximum diversity of forms there; it has been cultivated in Africa for over 4,000 years (Oyulu 1977). Watermelon was brought to America by Spanish and quickly became very popular crop (Robison and Decker 1997). Watermelon is a prostrate or climbing annual plant with several herbaceous firms and stout stems up to 3m long (Maynard 2001). The young parts are densely wooly with yellowish to brownish hairs while the older parts are hairless. The leaves are herbaceous but rigid, becoming rough on both sides, 60-200mm long and 40-150mm broad, but usually deeply 3 lobed with the segments again lobed or doubly lobed; the central lobe is much the largest. The leaf stalks are somewhat hairy and up to 150mm long. The tendrils are rather robust and usually divided in the upper part. Male and female flowers occur on the same plant (monoecious) with the flower stalk up to 40mm long and hairy. The fruit in the wild from is sub globose, indehiscent and up to 200mm in diameter: the fruit stalk is up to 50mm long (van, etal2004). The fruit is usually globose to oblong or ellipsoid, sometimes ovoid, 5-70cm long and weighting 0.1-3.0kg (0.1-2.5kg in egusimelon, 1.5-3.0kg in watermelon) the seed are obovate to elliptical, flattered 0.5-1.5cm X 0.5⁻¹cm smooth ,yellow to brown or black, rarely white (Jackson, 1990 in Hammer, 2007).

Common Names

Vernacular names of water melon (*citrullus lanatus*) include; egusi melon and egusi water melon. Other includes; west African water melon (EN). Watermelon, desert watermelon, cooking melon (Rhodes and Zhang 1999). Egusi melon its common names include egusi in Yoruba and agushi in Hausa. In English it is known as manns cucumeropsis and white seed melon. (Godwin 2008). Egusi (also known by variation include agusi, agushi) is the name for the

fat and protein rich seed of certain cucurbitaceous plant (squash melon, gourd), which after being dried and ground are used as a major ingredient in West African cuisine. Authorities disagree whether the word is used more properly for the seed of the colocynth, those of a particular large-seeded variety of the watermelon, or generically for those of any cucurbitaceous plant. Major egusi-growing nations include Mali, Burkina Faso, Togo, Ghana, cote d'ivoire, Benin, Nigeria, and Cameroon. (Godwin and Kajode 2008).

Egusi soup is a kind of soup thickened with the ground seed and popular in West Africa, with considerable local variation. Besides the seed, water and oil, egusi soup typically contains leaf vegetable, other vegetable, seasonings and meat. Leaf vegetable typically used for egusi soup include bitter leaf, celosia and spinach. Typical other vegetable include tomatoes and okra. Typical seasonings include chili peppers, onions, and locust beans. Also commonly used are beef, goat, fish, shrimps or crayfish. (Oluba, 2008).

In Nigeria, egusi is very popular among the igbo people of southeastern Nigeria, the Ibibio people and the efik people Calabar people of southern Nigeria, the Hausa people of northern Nigeria and the edo people, esan people, and etsako people of the south-west of Nigeria. Yoruba people in general and quite notably the people of Osun state. Especially the ijeshu people eat iyan and egusi, a pounded yam and egusi soup. (Adebisi and Olarewaju 2009).

Nutrient Composition

Watermelon contains about 6% sugar and 92% water by weight. As with many other fruit, it is a source of vitamin C. The composition of dried egusi seed without shell per 100g include:

Water	5.1g
Energy	2340kj (557kcal)
Protein	28.3g
Fat	47.4g
Carbohydrate	15.3mg
Calcium	54mg
Phosphorous	755mg
Iron	7.3mg
Thiamin	0.19mg
Riboflavin	0.15mg
Niacin	3.55mg
Folate	58ug

The seed being an excellent source of energy and contains no hydrocyanic acid, making it suitable as livestock feed. The seed oil contains glycosides of linoleic, oleic, palmitic and stearic acid. The fruit flesh contains bitter cucurbitacins (Schippers 2002).

The composition of watermelon per 100g edible portion (50-70% of the mature fruit) include:

Water	91.5g
Energy	134kj (32kcal)
Protein	0.6g
Fat	0.46g
Carbohydrate	7.2g
Calcium	8mg
Phosphorous	9mg
Iron	0.17mg
Thiamine	0.08mg
Riboflavin	0.02mg
Niacin	0.2mg
Folate	2 mg
Ascorbic	9.6mg

(US DA 2002)

Watermelon is a rich natural source of lycopene, a carotenoid of great interest because of its antioxidant capacity and potential health benefit (Rhodes and Zhang 1999).cucurbitaceae plants are known to contain bioactive compounds such as cucurbitacin triterpenes, sterols and alkaloid (Yuan,2006).

The amino acid citrulline had been extracted from watermelon and analyzed (Wada, 1930) watermelon with red flesh is a significant source of lycopene (Mandel 2005).

Nutritional Values

Every aspect of the fruit of watermelon has nutritional value, including the rind and the seed. The most common way watermelon is eaten, is the consumption of the pick or yellow flesh, eaten raw, the way it was grown. However, other common ways it is eaten include watermelon rind pickles, deep fried watermelon, watermelon cake, and watermelon lemonade (wind 2008).

In southern Africa it has been cultivated since pre-colonial times with other crops such as sorghum and maize. The tender young leaves and fruit are cooked as green vegetable while the fruit flesh may be cooked as porridge with maize meal, it is also a valuable stock feed especially in times of drought. The hollowed fruit can be used as a container for cooking or storing berries.

The pulp and seed are prepared in number of different ways for eating (Globinmed 2010). Flat brown seed have a much higher food value than the flesh and have a nice nutty taste. Significant amount of vitamin c, minerals fat, starch and riboflavin have been obtained from them they can be dried, roasted and eaten as such or ground into flour to make bread. The flour is said to contain saponin and is also used as a detergent. The seed contains a high percentage of oil which is similar to pumpkin seed oil and can be used in cooking (Moldenke and Moldenke, 1952).

In West African the seed are made into pulp and added as thickener to soups. They are also fermented to produce a sweetener locally called "ogiri" or they are roasted, pounded wrapped in leaves and then boiled to produce another sweetener called "igbalo". The residue from oil extraction is made into balls that are fried to produce a local snack called "robo" in Nigeria, or is used as cattle feed (Moldenke 1952).

Watermelon seed are increasingly used for their oil in semi-arid region and also the use of the oil in the cosmetics and pharmaceutical industry is increasing. There are also prospects for use of the seed in the improvement of infant nutrition in view of their high protein and fat content (Maynard 2001).

3. Discussion

Ethnomedicinal Relevance

Watermelon citroide (wild melon) has been reportedly used widely in traditional herbal medicine. The fruit of *Citrullus lanatus* is eaten as a febrifuge when fully ripe or even when almost putrid (Leyel, 1984). The root is purgative and in high dose it can also serve as emetic (Leyel 1984).

The seed is demulcent, pectoral and tonic (Duke and Ayensu 1985). It is sometimes used in the treatment of the urinary tract infection (Leyel, 1985). The fruit is also diuretic (Grieve and Leyel, 1985) and is effective in the treatment of dropsy and renal stones (Chiej, 1984). The seed is also a good vermifuge and has a hypotensive action. Preliminary research indicates that the consumption of watermelon may have antihypertensive effect (USA 2012). Fatty oil in the seed, as well as aqueous or alcoholic extract, had been reported to paralyze tape worms and round worms (Chopra, 1958).

The rind of the fruit is prescribed in cases of alcohol poisoning and diabetes (Duke and Ayensu, 1985). Watermelon is used in northern Sudan for burns, swellings, rheumatism, goat and as laxative (Budd, 1997). The fruit are used as a drastic purgative in Senegal; they are also used to treat diarrhea and gonorrhoea in Nigeria. Tar is extracted from the seed. And used for the treatment of scabies and for skin tanning (Budd, 1997). The seed oil has an emetic action which is better than that of pumpkin seed oil (Jackson 1990).

Health Benefits of Watermelon

1. **Heart:** To maintain a healthy heart needs to follow a diet lows in fat, cholesterol and rich antioxidants such as (lycopene), which works to fight free radical compound. There by protecting the vessels and arteries from hardening. And watermelon red rich in antioxidant, citrulline compound. Which helps to maintain good levels of histidine -arginine. Necessary for the production of nitric oxide. Which plays an important role in maintaining the elasticity of the arteries and blood vessels by helping to curb the interactions of oxidative stress.
2. **Cancer:** watermelon is rich in antioxidant such as lycopene which contains twice the amount found in tomatoes .watermelon also contains vitamin C, A. these compounds play an active role in the fight several cancer such as breast cancer, prostate cancer, uterine cancer, lung cancer, colorectal cancer by protective cells from free radicals damage to vehicles.
3. **Reduces Body Fat:** The citrulline in watermelon has been shown to reduce the accumulation of fat in our fat cells. Citrulline is an amino acid which converts into arginine with help from the kidneys. When our bodies absorb citrulline it can take the step of converting into arginine if so required citrulline, when consumed has the ability to(through a series of steps) block the activity of TNAP(tissue-nonspecific alkaline phosphatase) which makes our fat cell create lees fat, and thus help prevent over accumulation of body fat.
4. **Diuretic and Kidney Support:** Watermelon is a natural diuretic and kidney which helps increase the flow of urine, but does not strain the kidneys (unlike alcohol and caffeine). Watermelon helps the liver process ammonia (waste from protein digestion) which eases strain on the kidney while getting rid of excess fluids.
5. **Improves Eye Health and High Blood Pressure:** watermelon help produce the potassium and manganese pigments in the retina of the eye and protect against age related macular degeneration as well as prevent night blindness. Vitamin A also maintains healthy skin, teeth, skeletal and soft tissue and mucus membranes. Are working on blood pressure regulation as well as antioxidants work to maintain the health of vessels against sclerosis, which helps to ease the movement of the passage of blood vessels thus reducing the high blood pressure.

4. Conclusion

Watermelon possesses numerous bioactivities from natural source which is of better advantage than conventional therapies. Watermelon is an economically important fruit crop and valuable alternative source of water in desert areas. It is a good source of lycopene, citrulline and important minerals and vitamins. It has the highest lycopene content among fresh fruit and vegetable; watermelon contains 60% more lycopene than tomato. Lycopene in the human diet is associated with prevention of heart attack and certain cancers. Rind of watermelon contains an important natural compound called citrilline, an amino acid that the human body makes from food. Citruline is found in high concentration in liver and is involved with athletic ability and functioning of the immune system it is a good source of fiber which is important for keeping digestive tract operating properly by preventing constipation, hemorrhoids and diverticular disease.

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