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WATER MELON - THE MUST MELON

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ABSTRACT

Benjamin Franklin, America's greatest citizen, a printer by trade, scientist and philosopher by fame said, "Women & Melons are difficult to understand". Water melon (*Citrullus lanatus*) is a beautiful, juicy, tasty fruit of the Cucurbitaceae family. This family contains all the edible gourds, such as cucumbers, watermelons, Musk melons, squash, and pumpkins. Water melon is cultivated in all tropical and subtropical areas of the world for its nutritional and medicinal value.[1] It is a flowering plant originally from South Africa. Watermelon is grown in tropical and subtropical areas worldwide for its large edible fruit which is a special kind of berry with a hard rind and no internal division, botanically called a pepo.[2] The sweet, juicy flesh is usually deep red to pink, with many black seeds, although seedless varieties have been cultivated. The fruit can be eaten raw or pickled and the rind is edible after cooking. Watermelon fruit is composed of flesh (68%), seeds (2%) and rind approximately 30% of the total mass of the fruit. The sweet interior flesh of watermelon fruit is usually deep red or pink and in sometimes orange, yellow or may be green if not ripe. Basic macronutrients of watermelon fruit include carbohydrates, protein, dietary fiber and fat and their percentages in wet weight basis were 7.50, 0.61, 0.40 and 0.15%, respectively5.[3] Also, watermelon fruit is considered as a rich source of vitamins A, B, C and E and minerals K, mg, Ca and Fe and antioxidants e.g., phenolics and carotenoids6. Beneficial effects of watermelon fruit may be due to its content of bioactive compounds that have antioxidant or anti-inflammatory properties. Thus, it is evident that Water melon fruit possess a wide range of useful medicinal properties, which can be exploited clinically. The present review article covers comprehensively up-to-date information on the chemical constituents and medicinal profile of water melon.[4]

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INTRODUCTION

Citrullus lanatus (water melon) 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 roots. 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 woolly, referring to the small hairs on the stems and leaves of the plant.[5] *Citrullus lanatus* (watermelon) family Cucurbitaceae¹ is one of the largest fruit crop in the world, in 2013 watermelon global production approximated 109 million tons². Watermelon fruit is composed of flesh (68%), seeds (2%) and rind approximately 30% of the total mass of the fruit³. The sweet interior flesh of watermelon fruit is usually deep red or pink and in sometimes orange, yellow or may be green if not ripe. Basic macronutrients of watermelon fruit include carbohydrates, protein, dietary fiber and fat and their percentages in wet weight basis were 7.50, 0.61, 0.40 and 0.15%, respectively.[6] Also, watermelon fruit is considered as a rich source of vitamins A, B, C and E and minerals K, mg, Ca and Fe and antioxidants e.g., phenolics and carotenoids. Watermelon fruit as one with high natural antioxidant capacity. Flavonoids have recently found more attention because of their suggested roles against free radicals. Kaempferol is one of the bioflavonoid and found in plants and plant-derived foods. Quercetin is a type of bioflavonoid antioxidant abundant in the human diet. Another flavonoid is rutin which has a wide range of pharmacological properties (e.g., antioxidative activity) that had been evidenced in human medicine and nutrition. Sitosterol is a predominant phytosterol used to treat heart diseases, hypercholesterolemia and prevention of some other diseases. Beneficial effects of watermelon fruit may be due to its content of bioactive compounds that have antioxidant or anti-inflammatory properties.[7] Example of such bioactive compounds in watermelon fruit is citrulline (an amino acid) that may influence atherosclerosis. Because of these nutritional values watermelon must be eat melon.

BRIEF HISTORY

The watermelon originated in the deserts of Kalahari in Africa. Even today, it grows abundantly in this region. However, watermelon is an ancient fruit. The ancestors of the watermelon called the Tsamma melon, which are still found in the Kalahari Desert even today. Biologists claim that the fruit has to be the native of the African continent only. Some of the African slaves who went to the United States brought along the Tsamma melon, and that is how it started growing in Baja in California. Watermelon was being cultivated in the African continent as early as 2000 B.C. Some of the hieroglyphics found in the pyramids of Egypt show watermelon as a fruit. It was taken to China at the end of the 9th century.[8] The Chinese also started cultivating it rapidly, and it soon became a preferred fruit. Today, China is the top producer of Watermelon in the entire world. Throughout history, several other Asian countries like Pakistan and India have cultivated watermelon. It is largely found in the northern parts of India Watermelon have been cultivated at least as early as 2000 B.C.[9] It appears this fruit was largely unknown in other Mediterranean cultures of the time, but they were certainly cultivated in Asia (China in particular) by the end of the 9th century, and the word “watermelon” was present in English dictionaries in 1615. Several other Asian regions have cultivated watermelons in ancient history. Watermelon has been introduced to North America in, and Indians were found cultivating them by French explorers in the Mississippi valley.[10]

NAMES OF WATERMELON

Vernacular names:

Common name: Watermelon, Wild Watermelon

Local name: Tarbooz

Telugu: Pendalam

English: Watermelon

Malayalam: Thannimathan

Marathi: Tarbooz, Kalingad

Bengali: Tormuz

Canada: Kallagadi

Assamese: Tarmuj

SCIENTIFIC CLASSIFICATION:

Kingdom: Plantae

(Unranked): Angiosperms

Order: Cucurbitales

Family: Cucurbitaceae

Genus: *Citrullus*

Species: *C.lanatus*

BOTANICAL DESCRIPTION

Taxonomy:

Class: Equisetopsida

Kingdom: Plantae

Genus: *Citrullus*

Family: Cucurbitaceae

Order: Cucurbitales

Botanical name: *Citrullus lanatus* (Thumb)

Watermelon of standard size grows into long, rambling vines. There are smaller, hybrid vines, which only spread to a diameter of 5 or 6 feet. Watermelon vines are clothed with a large leaves and light yellow flowers, which are followed by the juicy fruit. Watermelons are grown for their sweet, juicy interiors and in China, for edible seeds. They range in size from very large and heavy to moderate size and small hybrids. The rind is hard, green and usually striped. The flesh may be pink, red, or yellow. Seedless Watermelons are also available but expensive. The fruit may be round, oval or cylindrical, depending on the variety, and weigh from 3 to 25kg. The color of the skin may vary from white through shades of green and may be mottled or striped. Flesh color varies from yellow through to red. Red-fleshed varieties are the most popular. The flesh is about 90% water and 8 to 12% sugar.[11,12].



PHARMACOLOGICAL ACTIVITY

ANTIMICROBIAL ACTIVITY

The antimicrobial activities of crude chloroform, hexane and ethyl alcohol leaves, stem, fruits and seeds extracts of *Citrullus lanatus* depicted antibacterial activity against *Escherichia coli*, *staph aureus*, genus *Pseudomonas aeruginosa*, *Bacillus subtilis* and *Proteus vulgaris* and antifungal activity against *As per gillusnigar* and *fungus albican* [12] . *Citrullus lanatus* seed extract obtained by cold maceration showed potential antibacterial action against *Staphylococcus sp.* and *P. aeruginosa* [13] .

ANTIGIRARDIAL ACTIVITY

Citrullus lanatus fruits, petroleum ether, ethyl acetate, and alcohol crude extracts and Cucurbitacin E and Cucurbitacin L 2-O- β glucoside pure isolated compounds from *C. lanatus* var. *citroides* showed in potent anti-giardial activity against *giardia lamblia*. The ethyl acetate extract was the most effective among all examined extracts [14] .

HEPATOPROTECTIVE ACTIVITY

Citrullus lanatus seed oil depicted hepatoprotective activity against CCL4 induced hepatotoxicity in rats. The dose of 125 and 250 mg/kg showed significant decrease in blood serum ALT, AST and ALP levels treated groups are comparable negative control. Histopathological study of liver tissue also unraveled the hepatoprotective activity of *Citrullus lanatus* seed oil [15] .

ANTI-ULCEROGENIC ACTIVITY

Citrullus lanatus seeds crude methanolic extract shown the anti-ulcerogenic property in albino wistar rats in pyloric ligation and in water immersion stress induced ulcer model. The extract at 300 mg/kg body weight, once daily orally for 7 days showed significantly reduced in the gastric volume (53.55%), free acid (53.02%) and total acid (36.53%) in case of pyloric ligation model. The ulcer protecting result of *Citrullus lanatus* could also be because of its anti-secretory alongside its cytoprotective [16] .

ANTI DIABETIC ACTIVITY

The anti-diabetic potential of watermelon was evaluated in vivo using ICR mice. Animals were fed with experimental diet containing 10% watermelon IJPBA, Jan-Feb, 2017, Vol. 8, Issue, 1 G Kumawatet et al. \Citrullus lanatus: An Overview on Pharmacological Activities 8 © 2010, IJPBA. All Rights Reserved. flesh powder (WM-P) or 1% watermelon rind ethanol extracts (WM-E). At the end of 4 weeks, mice were administrated with streptozotocin (40 mg/kg, i.p.) for 5 consecutive days to induce diabetes. Supplementation with WM-E significantly decreased blood glucose level and increased serum insulin levels. Histochemical analysis showed watermelon that effectively protected pancreatic cells death, which suggest that watermelon has a beneficial effect on diabetes [17].

LAXATIVE ACTIVITY

Aqueous extract of Citrullus lanatus fruit pulp depicted laxative effect in Wistar rats. The weight of the fecal material increases significantly in treated rats. The aqueous fruit pulp extract of Citrullus lanatus alters the intestinal motility in the rat [18]. Anti-Prostatic Hyperplasia activity Methanolic extract of Citrullus lanatus seed (MECLS) found effective against experimentally induced benign prostate hyperplasia. The histological studies clearly establish MECLS as a potential candidate in management of androgen dependent conditions like benign prostate hyperplasia [19].

ANTIOXIDANT ACTIVITY

The chloroform, ethyl acetate and methanol extracts of Citrullus lanatus depicted antioxidant activity, measured by DPPH method. Methanolic extract of Citrullus lanatus (MECL) seeds showed maximum antioxidant potential [20]. Analgesic activity The aqueous extract of Citrullus lanatus peels (AECL) showed analgesic activity in Eddy's hot plate experiment. The AECL produced a significant analgesic activity in a dose dependent manner. All the doses of AECL (250, 500 and 1000mg/kg) had shown a good analgesic activity which was comparable to Diclofenac sodium [21].

ANTI INFLAMMATORY ACTIVITY

Citrullus lanatus seed oil (CLSO) depicted anti-inflammatory activity in carrageen an induced paw edema in rat model. The potency of the oil compared (50 mg/kg and 100mg/kg) with standard diclofenac (10 mg/kg) showed significant reduction in rat paw edema induced by carrageen an [22].

DISCUSSION

Citrullus lanatus is an important ethanomedicinal plant grows in India, Africa, Asia and USA. Various parts of the Citrullus lanatus such as fruit pulp, juice, rind, seeds and leaves are used as ethanomedicine in the area it grows. The medicinal important of the plant stimulated phytochemical and pharmacological studies, Citrullus lanatus depicted antimicrobial, antigirardial, hepatoprotective, anti-ulcerogenic property, anti-diabetic, laxative, antisecretory effects, anti-prostatic hyperplasia, antioxidant, analgesic, antifungal, anti-inflammatory effects in animal models. The use of *Citrullus lanatus* as diuretic is prevalent in traditional system of medicine, which warrants further study regarding its diuretic effects. Water melon is the whole food so must eat water melon.

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