ISSN 0976 – 3333

Available Online at www.ijpba.info

International Journal of Pharmaceutical & Biological Archives 2017; 8 (1): 6 - 9

REVIEW ARTICLE

Citrullus lanatus: An Overview on Pharmacological Activities

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Received 28 Nov 2016; Revised 07 Feb 2017; Accepted 17 Feb 2017

ABSTRACT

The *Citrullus lanatus* is commonly known as Water melon. *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. The pharmacological studies conducted on *Citrullus lanatus* depicted antimicrobial, antigiardial, hepatoprotective, anti-ulcer genic property, anti-diabetic, laxative, antisecretory effects, anti-prostatic hyperplasia, antioxidant, analgesic, antifungal, anti-inflammatory effects in animal models. The present review is an effort to compile information regarding botanical descriptionand pharmacological activities of *Citrullus lanatus* to stimulate further scientific research.

Keywords: *Citrullus lanatus*, water melon, ethanomedicine, analgesic.

INTRODUCTION

Citrullus lanatus (Watermelon) is belonging to the Cucurbitaceous family. *Citrallus lanatus* is called as watermelon because of large amount of water it contains, which is about 93% of weight [1].Water melon fruits give chilling effect and reduce thirst. The plant is traditionally used for centuries in the treatment of various diseases. It is an important medicinal plant used in the Ayurveda and traditional system of medicine [2]. The plant is rich in flavonoids, alkaloids, saponins, glycoside, tannins and phenols. Ithas nutritive values and good for human health. It grows in India, Africa, Asia, USA, China, Russia, Romania and Bulgaria etc.

Botanical description: [3]

Taxonomy:
Class: Equisetopsida
Kingdom: Plantae
Genus: Citrullus
Family: Cucurbitaceous
Order: Cucurbit ales
Botanical name: *Citrulluslanatus* (Thumb)

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

Morphological characters:

Stems: *Citrullus lanatus* is a prostrate or climbing annual with several herbaceous, rather firm and stout stems up to 3 m long; the young parts are densely woolly with yellowish to brownish hairs while the older parts become hairless.

Leaves: The leaves are simple, alternate on long petioles, cordate with seven shallow lobes and variously serrated margins, very hairy on the abaxial surface, acute, deep green, and about 7 – 15 cm in diameter. Tendrils are normal and spiral.

Flower: Male and female flowers grow on the same plant. Male flowers are found in clusters and appear before the female flowers. Both have yellow petals, five in number, and sepals, also five in number and greenish in color. Occasional hermaphrodite flowers are produced.

Fruits: The fruits are globular with shallow grooves, about 14 –20 cm long. The skin is greenish yellow. The flesh is almost white/light yellow, sweet.

Seeds: The seeds are small, light brown white and smooth, between 0.4 and 1.1cm long and 0.2 – 0.3cm wide [4].

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Fig 1: *Citrullus lanatus* leaf

Fig 2: *Citrullus lanatus* fruit

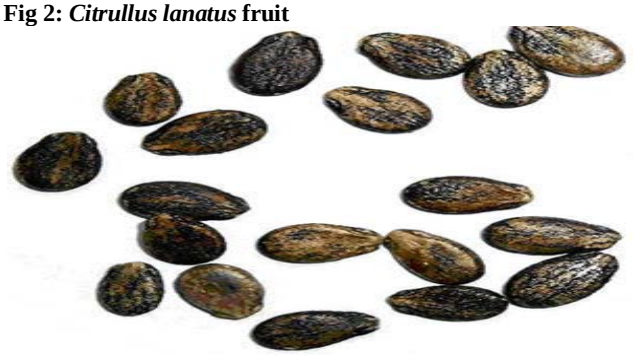

Fig 3: *Citrullus lanatus* seeds

Traditional claims:

Citrullus lanatus seeds are used as anthelmintic, anticancer,antibacterial,demulcent,relieves,constipation,diarrhea, cardiac, diuretic, kidneytroubles, cooling effect, demulcent, pectoral, tonic, burns, swellings, rheumatism, gout [5,7,9]. The *Citrullus lanatus* (mateera)anditsproductsareusedasanti-inflammatory,laxative,antihypertensiveandantidepressant.The Mateerauseto eradicate the urinary problems, weakness [6]. The pulp of with strawberry, peach, pine apple, and cucumber pulp

Fig 2: *Citrullus lanatus* fruit

used in masks for dry skin [8].The rind of fruits is used in treatment of alcoholic poisoning and diabetes. The root is used as purgative and in large doses as an emetic. Seeds are also used as vermifuge and have hypertensive action. Fatty oils in the seeds as well as in aqueous and alcoholic extracts paralyze tapeworms and roundworms [9]. It is also used for cleansing and purifies kidney and bladder, for treating erectile dysfunction and hepatomegaly and jaundice [10, 11].

Pharmacological activities:

Antimicrobial activities

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 anti-fungal 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].

Antigiardial 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. citroidesshowed in potentantigiardial activity against giardia lamblia. The ethyl acetate extract was the most effective among all examined extracts [14].

Hepatoprotective activity

Citrulluslanatusseed 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 property

Citrulluslanatus seeds crude methanolic extract shown the anti-ulcerogenicproperty 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 Citrulluslanatus could also be because of its anti-secretory alongside its cytoprotective [16].

Anti-diabetic activity

The anti-diabetic potential of watermelon (*Citrullus vulgaris* Schrad) was evaluated in vivo using ICR mice. Animals were fed with experimental diet containing 10% watermelon

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 carrageenan [22].

DISCUSSION

Citrullus lanatus isan 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, antigiardial, hepatoprotective, anti-ulcer genic 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.

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