**ABSTRACT**

The *Citrullus lanatus* is commonly known as Watermelon. *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, anti-diabetic, hepatoprotective, anti-ulcerogenic property, anti-prostatic hyperplasia, antioxidant, analgesic, antifungal, anti-inflammatory effects in animal models. The present review is an effort to compile information regarding botanical description and pharmacological activities of *Citrullus lanatus* to stimulate further scientific research.

**Keywords:** *Citrullus lanatus*, watermelon, ethanomedicine, analgesic.

**INTRODUCTION**

*Citrullus lanatus* (Watermelon) is belonging to the Cucurbitaceous family. *Citrullus lanatus* is called as watermelon because of large amount of water it contains, which is about 93% of weight [1]. Watermelon 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. It has 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: Cucurbitaceae
  - Order: Cucurbitales
  - Botanical name: *Citrullus lanatus* (Thumb)

- **Vernacular names:**
  - Common name: Watermelon, Wild Watermelon
  - Local name: Tarbooz
  - Telugu: Pendalam
  - English: Watermelon
  - Malayalam: Thannimathan
  - Marathi: Tarbooz, Kalingad

**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 globose 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 1.1 cm long and 0.2 – 0.3 cm wide [4].

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Traditional claims:

*Citrullus lanatus* seeds are used as anthelmintic, anticancer, antibacterial, demulcent, relieves constipation, diarrhea, cardiac, diuretic, kidney troubles, cooling effect, demulcent, pectoral, tonic, burns, swellings, rheumatism, gout \(^5,7,9\). The *Citrullus lanatus* (mateera) and its products are used as anti-inflammatory, laxative, antihypertensive, and antidepressant. The Mateera is used to eradicate the urinary problems, weakness \(^6\). The pulp of with strawberry, peach, pine apple, and cucumber pulp is 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 antifungal activity against Aspergillus niger and fungus albican \(^13\). *Citrullus lanatus* seed extract obtained by cold maceration showed potential antibacterial action against Staphylococcus sp. and *P. aeruginosa* \(^13\).

**Anti-giardial 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 lambia. 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 property**

*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 (*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* 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, anti-giardial, 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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