ISSN: 2455-8109

***International Journal of Farmacia* (IJF)**

IJF |Vol.11 | Issue 3 | Jul - Sept -2025

www.ijfjournal.com

DOI : https://doi.org/10.61096/ijf.v11.iss3.2025.158-166

Review

Traditional Uses and Pharmacology of Luffa Acutangula

Vigneshwaran.L V, Kathirvel.B*, Abinayah.S, Nithishkumar.S, Vidhyasree.R, Priya.G, Sarnaya.T

RKP College of pharmacy, Krishnagiri, Tamilnadu, India

*Author for Correspondence: Prof. Kathirvel. B
Email: kathirvel9443@gmail.com

Published on: 19 Sept 2025

Published by:
Futuristic Publications

Abstract

The climbing plant *Luffa acutangula*, also referred to as angled luffa or ridge gourd, is used extensively in traditional medicine throughout Asia and Africa. This plant, which is a member of the *Cucurbitaceae* family, has long been prized for its medicinal and nutritional qualities. The fruits, seeds, leaves, and roots of *Luffa acutangula* have all been used traditionally to cure conditions like diabetes, jaundice, skin conditions, inflammation, and respiratory issues. Many of these ethnomedicinal claims are supported by recent pharmacological research, which has shown the plant's antidiabetic, hepatoprotective, antioxidant, antibacterial, and anti-inflammatory qualities. Key bioactive components that contribute to its many therapeutic benefits have been found by phytochemical investigations, including flavonoids, saponins, alkaloids, and phenolic compounds. This review emphasises the importance of Luffa acutangula by highlighting its traditional applications, phytochemistry, and pharmaceutical potential. as a potential supply of organic medicinal substances.

Keywords: Antidiabetic activity**,** anticancer activity, analgesic and anti-inflammatory activity

INRODUCTION

According to recent reviews, the medicinal plants had a variety of pharmacological effects, including central nervous system cardiovascular, antioxidant reproductive gastro-intestinal, respiratory, antidiabetic antimicrobial antiparasitic dermatological, anticancer, anti-inflammatory, antipyretic, and analgesic immunological, hepato and reno-protective and many more. The fruits contained tannin, saponin, *anthroquinone*, sterols, glycosides, carbohydrates, reducing sugar, flavonoids, phenolic compounds, quinines, lignins, cucurbitacins, oil, and triterpenes, according to the phytochemical examination of Luffa acutangula extracts. Antimicrobial, antiparasitic, anticancer, antioxidant, hypoglycemic, hepato-, cardio-, nephro-, and

gastroprotective, anti-inflammatory and analgesic, immunomodulatory, abortifacient, anticataleptic, and behavioral-altering properties were all demonstrated by pharmacological research on Luffa acutangula. The purpose of this review was to highlight *Luffa acutangula's* chemical components and pharmacological effects (1). Current clinical research supports the many health advantages that Ayurveda attributes to riding gourd. Ridge gourds have a cooling impact on the body since they are high in minerals and highly alkaline. From According to Ayurveda, ridge gourd cools and soothes the body's doshapitta while increasing vata and kapha. Fruits, leaves, seeds, and even the roots of the ridge gourd plant are all utilized for their therapeutic properties.(2)

Kingdom	**Plantae;**
Subkingdom	The Viridiplantae
Infrakingdom	Streptophyta,
Superdivison	Embryophyta
Division	Tracheophyta
Subdivision	Spermatophytina,
Class	Magnoliopsida,
Superorder	Rosanae
Order	Cucurbitales,
Family	Cucurbitaceae,
Genus	Luffa
Species	Luffa acutangula

COMMON NAMES	
Arabic	leef
Chinese	guang dong si gua;
English	angled loofa, angled loofah
French	papangaye
German	gerippte Schwammgurke
India	Jhinga tor,
Japanese	tokado-hechima
Malaysia	ketola, petola segi
Philippines	patola
Portuguese	Bucha de purge, Lufa riscada
Russian	Lufa
Spanish	espoja, esponja, esponja estropajo, muņeco, servilleta de pobre
Swedish	kantgurka;
Vietnam	muop khia

DISTRIBUTION

Native to the Indian subcontinent (India and Pakistan), Luffa acutangula has spred throughout the tropics and subtropics. Asia is where it was found: China, Hong Kong, and Bangladesh. Africa: Benin, Chad, Ghana, Kenya, Madagascar, Mauritius, Mozambique, Nigeria, Sierra Leone, Uganda; North America: USA, Mexico; Central America and the Caribbean: Costa Rica, Cuba, Dominican Republic, El Salvador, India, Japan, Kazakhstan, Malaysia, Myanmar, Pakistan, Philippines, Sri Lanka, Taiwan, Thailand, Vietnam, Yemen South America (Brazil, Ecuador, Peru, Venezuela); South America (Jamaica, Martinique, Puerto Rico, Trinidad & Tobago); and Australia (4,5)

DESCRIPTION

The herbaceous, coarse, annual Luffa acutangula Green, angular, scabrous stems with trifid tendrils. The leaves are alternating; the blades are 15-20 cm long, 5-7-palmatilobed, chartaceous, with lobes that are more or less deep, an acute or acuminate apex, a cordiform or hastate base, sinuate-dentate or denticulate edges, and scabrous upper and lower surfaces. The petioles are 8-10 cm long. Flowers are actinomorphic and unisexual. The flower is pale yellow, with deep, obtuse lobes; the calyx is urceolate, triangular, and 10–12 mm long with keeled lobes. Staminate flowers in racemes; three stamens, free filaments, villous, 3–4 m long. The ovary inferior is tricarpellate, claviform, 10-angled, with numerous horizontal ovules, a short style, and globose stigmas. The pistillate flowers are solitary, with a hypanthium that is less than 1 cm long. The staminodia are three, minute,

and glandular. Fruit claviform, 15–30 cm long, with 10 longitudinal ribs, crustose pericarp, Apical holes cause dehiscence; several ovate, 11–12 mm long, blackish seeds(6).

PHYTOCONSTITUENTS

The different phytochemicals found in L. acutangula. Carotenoids9, carbohydrates, fat, protein, phytotin, and amino acids (alanine, arginine, cystine, glutamic acid, glycine, hydroxyproline, leucine, serine, and tryptophan) are the primary chemical components of L. acutangula. flavonoids, pipecolic acid, and saponins. Anovel N-terminal ribosome inactivating peptide Luffangulin was extracted from L. acutangula12 seeds. The seeds of L. acutangula13 were also found to contain sapogenin, oleanolic acid, and a bitter component called cucurbitacin B. According to its nutrient value, L. acutangula oil had iodine, saponification, and acid values of 99.5, 190.8, and 10.5, respectively, and a melting point between -3°C and -10°C.(7)

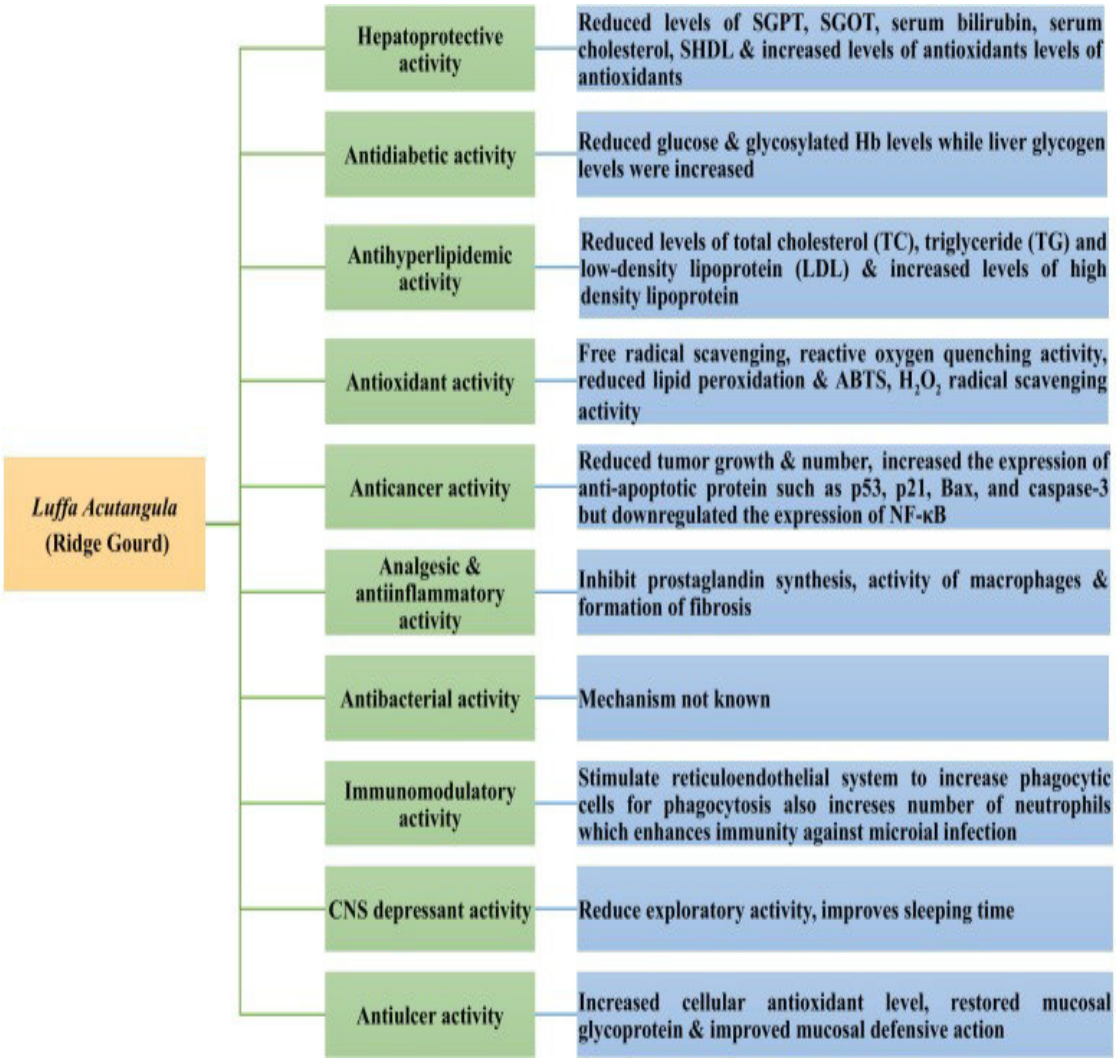
NUTRITIONAL VALUE

The ridge gourd fruit is most frequently prepared as a vegetable. It is a highly nutritious plant that tastes unpleasant when consumed uncooked. A nutritious dish that may be used as an appetizer, ridge gourds are high in fiber, vitamins, and minerals such as vitamin B2, vitamin C, carotene, niacin, calcium, phosphorus, iron, and trace amounts of iodine and fluorine. Ridge gourds are cooling, easy to digest, and have a plesant taste. They provide a low-calorie diet, which is beneficial for those with diabetes. The ridge gourd's soft pulp and skin are both utilized in a variety of cuisines, particularly in South Indian cooking. The health advantages of chutneys produced from ridge gourd peel and pulp are well-known. (8)

BIOLOGICAL ACTIVITIES

S.no	Title of the article	Biological activity
1	Hydroalcoholic extract of l. acutangula Saponin fraction of L.acutangula seeds Ethanolic fruit extracts of l. acutangula	Hepatoprotective activity(9)
2	Ether, chloroform, ethanol and aqueous extracts of fruits of *L.*acutangular. Juice of *L. acutangular.*Methanolic and aqueous extracts of fruit of *L.acutangula*	Anti-diabetic activity(10)
3	Methanolic and aqueous extracts of fruit of *L.acutangula*	Anti-ulcer activity (11)
4	Methanolic extract of fruit of *L.* Acutangula	Anti-proliferative and anti-angiogenic effects(12)
5	Ethanolic and aqueous extracts of *L.* Acutangula	Anti-cancer(13)
6	Extracts were prepared by cold maceration using aerial parts of luffa acutangular. Methanolic and aqueous extracts of *L.acutangula* Ethanolic seed extract of *L.* Acutangula	Antioxidant activity(14)
7	Ethanolic extract of *L.acutangula* Fruits	CNS depressant activity(15)
8	Seeds of *L. acutangula*	Fungistatic property(16)
9	Ethanolic extract of fruit of *L.*acutangula	Anti-cataleptic activity(17)
10	Ethanolic extract of fruit of *L.* Acutangula	Analgesic activity(18)
11	Fruit extract of *L. acutangular* Methanolic and aqueous extracts of *L. acutangula*	Antimicrobial activity(19)
12	*L.acutangula* fruits	Developmental toxicity(20)
13	Aerial parts of *L. acutangular*	Larvicidal activity(21)
14	Ethanolic extracts of Pericarp of *L.*Acutangula	Immuno modulatory activity(22)

PHARAMACOLOGY STUDIES



HEPATOPROTECTIVE ACTIVITY

Luffa acutangula has been shown in numerous research to have therapeutic promise against liver disorders. In cases of carbon tetrachloride-induced liver necrosis, ethanolic fruit extract shown a notable hepatoprotective effect in comparison to pet ether extract. Additionally, it markedly decreased serum bilirubin, cholesterol, triglycerides (TG), serum high density lipoproteins (SHDLs), serum total proteins, serum albumin, serum SGPT, SGOT, and serum alkaline phosphatase (ALP). According to Ibrahim et al. (2014), histopathological analyses of the liver revealed that the petroleum ether extract had early necrosis while the ethanolic extraction did not, suggesting that the latter had hepatoprotective potential.(23)

In a different study, researchers looked at the hepatoprotective properties of a 70% hydro-alcoholic fruit extract against rifampicin-induced hepatotoxicity and carbon tetrachloride-induced hepatotoxicity in Wistar rats. The extract's hepatoprotective effect in the rat was attributable to the considerable reduction in serum marker enzyme levels (AST, ALP, ALT, and LDH) at dosages of 100, 200, and 400 mg/kg, p.o. (17)

Mishra and Mukerjee (2017) assessed the hepatoprotective efficacy of several alcoholic fruit extract fractions against liver damage caused by paracetamol. Biochemical parameters were examined after ethanolic extract fractions containing toluene, chloroform, and ethyl acetate were given orally at a dose of 100 mg/kg. When compared to other fractions, the ethyl acetate fraction raised the direct bilirubin level while restoring normal levels of ALT, AST, and ALP. When live cells were examined histopathologically, there was decreased vacuole formation and no necrosis .(18)

Additionally, Ulaganathan et al. (2010) tested the leaves' ethanolic extract's hepatoprotective properties against carbon tetrachloride. Oral application of leaf extract restored the increased levels of serum indicators

(SGPT, SGOT, and ALP) caused by carbon tetrachloride to normal. Tissue specific antioxidant activity of extract have been observed with the help of enhanced levels of glutathione peroxidase, glutathione-s-transferase, reduced glutathione, superoxide dismutase, catalase, and lipid peroxidation (19)

When combined, these findings lend credence to Luffa acutangula's historic use as a hepatoprotective agent. However, because human trials were not conducted, the hepatoprotective effect remains questionable. Ridge gourd should therefore be further researched because it may be useful in treating liver disorders in humans.

ANTIDIABETIC ACTIVITY

Fruit juice has been used to treat an adrenal kind of diabetes, according to ancient literature (7). Numerous investigations have been conducted to demonstrate the plant's antidiabetic properties. Long Evans female rats were used to test the hypoglycemic effects of a 95% ethanolic extract of the fruit of Cucumis sativus, Lagenaria siceraria, and Luffa acutangula against alloxan monohydrate. All extracts (200 mg/kg i.p.) decreased fasting blood glucose levels by 67.38, 65.39, and 51.10% on average after 12 hours. Treatment with an ethanolic extract of Luffa acutangula (149.35%) alleviated the diabetic rat's reduced glycogen level (75.32%) (Sharmin et al., 2013). In a different study, Swiss albino mice showed a dose-dependent reduction in glucose due to methanolic fruit extract (20).

Additionally, Mohan Raj et al. (2012) investigated the lyophilized 50% ethanolic fruit extract's antidiabetic efficacy on Wistar rats with diabetes induced by streptozotocin. For 21 days, two distinct dosages 200 and 400 mg/kg were taken orally, and various biochemical markers were assessed. Along with a significant dose-dependent decrease in blood glucose, there was also a decrease in serum levels of SGPT, SGOT, and ALP. At the conclusion of the study, there were no discernible changes in the animal's body weight or food consumption (24).

The hypoglycemic impact of an aqueous and methanolic fruit extract against streptozotocin-induced diabetes in Swiss albino mice was examined by Pimple et al. (2011) in a different studies. Following 21 days, there were improvements in liver glycogen levels and a drop in fasting serum glucose, glycosylated hemoglobin, ALT, and AST. These changes are believed to have helped to lessen the hyperglycemic state in mice (22).

The antidiabetic effects of Grewia asiatica leaves, Bombax ceiba bark, and Luffa acutangula fruits were evaluated by Patil et al. (2010) in relation to alloxan-induced diabetic Wistar rats. Each plant's ethanol, chloroform, ether, and aqueous extracts (200 mg/kg b.w.) were given orally, and the results were compared to those of conventional glibenclamide (10 mg/kg b.w.). Chloroform and alcoholic fruit extract significantly reduced blood glucose, according to the acute study's findings (25).

In an OGTT using Swiss Webster mice, Quanico et al. (2008) examined the hypoglycemic effects of methanol extracts of the leaves of Bixa orellana, Kyllinga monocephala, and Luffa acutangula. When given to rats after a 15-minute glucose load, Luffa acutangula extract demonstrated a substantial reduction in glucose levels (26).

Singh and colleagues (2014) investigated the effects of hydro-alcoholic extracts of Madhuca longifolia and Luffa acutangula on alloxan-induced diabetic Wistar rats and found that the diabetic rats' glucose levels significantly decreased (27).

The traditional usage of Luffa acutangula as an antidiabetic medication is supported by the results obtained under antidiabetic action. Even if it has antidiabetic properties, its effects on humans are still not adequate for treating diabetes, and further research is necessary.

ANTIHYPERLIPIDEMIC ACTIVITY

Sharmin et al. (2013) examined how well ethanolic extract (95%) of fruit from Cucumis sativus, Lagenaria siceraria, and Luffa acutangula reduced cholesterol levels in Long Evans female rats in comparison to alloxan monohydrate. In rat serum, extract dramatically decreased levels of low-density lipoprotein (LDL), total cholesterol (TC), and triglycerides (TG) by 38.38, 79.64, and 85.66%, respectively (20)

An aqueous and methanolic fruit extract (200 and 400 mg/kg) was shown to have antihyperlipidemic effect in streptozotocin-induced diabetic mice. According to Pimple et al. (2011), oral treatment of the extract for 21 days resulted in a significant ($P < 0.05$) increase in high-density lipoprotein levels and a decrease in serum TC, TGs, low-density lipoprotein, and very low-density lipoprotei(22). There aren't many in vivo investigations on Luffa acutangula's antihyperlipidemic effects. Additionally, more preclinical and clinical research have to be conducted to examine its significant impact on blood cholesterol levels.

ANTICANCER ACTIVITY

An aqueous and methanolic fruit extract's anti-cancer properties were investigated using a solid tumor model created by Dalton's lymphoma ascites (DLA) cells. Swiss albino mice were given DLA cells and two oral doses of each extract (200 and 400 mg/kg) during the trial. Mice treated with both extracts showed a substantial reduction in the development of solid tumors (28).

Additionally, the ethanolic leaf extract's growth-inhibiting properties were examined using the human lung cancer cell line (NCI-H460). According to Vanajothi et al. (2012), cell lines exhibited high DCF fluorescence and dramatically elevated mitochondrial depolarization, confirming the extract's anticancer action, while the MTT experiment revealed an IC50 value of 20 µg/ml(29).

However, not enough research has been done to demonstrate the plant's anticancer properties, therefore it is too early to draw any firm conclusions. To demonstrate the anticancer effectiveness of plants, both in vitro and in vivo anticancer research are advised.

ANALGESIC AND ANTI-INFLAMMATORY ACTIVITY

Iyyamperumal et al. (2013) used models of cotton pellet granuloma and hind paw edema caused by carrageenan to compare the anti-inflammatory properties of ethanol and ethyl acetate extracts of dried leaves. Ethanolic extract demonstrated 67.6% and 72.5% edema inhibition in the acute carrageenan-induced model, whereas ethyl acetate demonstrated 62.5% and 65% inhibition at 250 and 500 mg/kg, respectively. In the chronic cotton pellet granuloma model, ethanolic extract demonstrated 43.5% and 56.9% edema inhibition, whilst ethyl acetate demonstrated 36.5% and 52% inhibition at dosages of 250 and 500 mg/kg, respectively (16).

Gill et al. (2011) examined the ethanolic seed extract's analgesic and anti-inflammatory properties in albino rats. Carrageenan-induced paw edema was used to assess the anti-inflammatory (100, 200, and 300 mg/kg, oral) and analgesic (200 and 400 mg/kg, oral) effects of the tail flick and tail immersion techniques. The seed extract demonstrated significant anti-inflammatory effect at 300 mg/kg and analgesic action at 400 mg/kg (30). When combined, these reports lend credence to the traditional usage of Luffa acutangula as a pain reliever; yet, because humans were not included in the research, the findings remain unconvincing. Therefore, the plant should be thoroughly investigated as an analgesic and anti-inflammatory.

ANTIBACTERIAL ACTIVITY

Numerous investigations have recently been conducted to demonstrate the capacity of different Luffa acutangula extracts to inhibit the growth of microbial strains. Gram-positive bacteria are significantly more susceptible to the antibacterial effects of silver nanoparticles made from an aqueous extract of leaves than Gram-negative bacteria (31)

Jadhav and Chavan (2013) investigated the in vitro antibacterial properties of methanolic and aqueous extracts of fruit, seed, leaves, and roots using the well diffusion assay. With rare instances, the methanolic extract displayed the highest zone of inhibition. While the methanolic extract of the fruit and leaves demonstrated notable inhibition against Klebsiella pneumonia, the extract of all components shown strong inhibitory effect against E. coli and Staphylococcus aureus. Additionally, methanolic extracts of the fruit and root showed greater suppression of Fusarium sp. than other sections. Both leaf extracts worked well against Aspergillus niger. The study's overall findings showed that the phyto-constituents in the various portions caused their antibacterial activity to be solvent dependant (32).

In a different investigation, fruit extract had more antibacterial and antifungal activity than leaf extract. E. Coli had a larger region of inhibition than Pseudomonas aeruginosa and Staphylococcus aureus (33).

Fruit extracts in aqueous form and chloroform were tested for antibacterial and antifungal properties. While antifungal activity was assessed against Candida albicans, Aspergillus niger, and Aspergillus fumigates, antimicrobial activity was assessed against Gram-positive bacteria (Streptococcus aureus, Bacillus subtilis) and Gram-negative bacteria (Pseudomonas aeruginosa, Escherichia coli). In the MIC testing, the chloroform extract shown stronger antifungal and Gram-negative bacterial activity(34).

Bulbul et al. (2011) also used the disk diffusion method to examine the antibacterial activity of leaf extracts in n-hexane, chloroform, and ethyl acetate. While ethyl acetate extract shown little to no activity, n-hexane extract demonstrated the strongest inhibitory effect, followed by chloroform extract (14).

According to the facts above, plants have strong antibacterial properties, which supports their traditional use. However, further research is required to identify the bioactive chemicals and comprehend how they work against bacteria.

IMMUNOMODULATORY ACTIVITY

Swiss albino mice were used to test the immunomodulatory effects of fruit pericarp ethanol extract at doses of 100 and 200 mg/kg, p.o. When ethanolic extract (200 mg/kg) was administered to Indian ink-intoxicated mice, the phagocytic index evaluation showed that phagocytosis increased to 0.028 ± 0.002 ($P < 0.01$). Additionally, mice receiving 200 mg/kg had a higher neutrophil adhesion percentage ($24.63 \pm 0.87\%$) than those receiving the conventional medication Levamisol ($23.58 \pm 0.46\%$) (13). To prove that it has immunomodulatory function, more research is required.

CNS DEPRESSANT ACTIVITY

In Swiss mice, Misar et al. (2004) investigated the CNS depressive effects of ethanolic fruit extract at doses of 5 and 10 mg/kg, p.o. Up to 50 mg/kg of the extract was a safe dosage with no side effects. Animal models with altered behavior, exploratory activity, and barbiturates during sleep were used to assess CNS depressant action. The study's findings demonstrated that the extract's CNS depressive action varies with dosage (35). To confirm the plant's CNS depressive activity, more in vitro and in vivo research should be conducted.

ANTIULCER ACTIVITY

In NIDDM rats, the gastroprotective effects of methanolic and aqueous dried fruit pulp extract were examined. Streptozotocin (65 mg/kg i.p.) and nicotinamide (125 mg/kg i.p.) caused diabetes, while aspirin (200 mg/kg p.o.) caused ulcers in the diabetic rat. Rat stomach mucosa treated with methanolic extract showed restored mucosal glycoprotein levels and increased cellular SOD and catalase levels. When it came to improving the delayed healing of stomach ulcers in diabetic rats, the methanolic extract outperformed the aqueous extract. Furthermore, methanolic extract demonstrated mucosal defense effect and dose-dependent glucose reduction (36).

TRADITIONAL USES

Luffa acutangula is known as koshataki in ayurvedic traditional system As part of shodhana therapy in panchakarma, the herb koshataki-luffa acutangula is used in Ayurveda to treat skin conditions, splenomegaly, swelling, and to induce purgation and emesis.

TYPES

Two varieties of koshataki exist. One type is bitter and used for medical purposes, while the other is non-bitter and utilized as a vegetable nationwide. These are referred to as raja koshataki (grown and used as a vegetable) and koshataki (widely varied and bitter) in the old ayurvedic books.

Delhana's four types

Brihat Phala

Alpaphala

Pitapushpa

Swetapushpa

USES OF KOSHATAKI

In panchakarma therapy, the juice of the koshataki fruit is administered as poorvakarma to induce vomiting and purging.

To treat a variety of skin conditions, 10–20 milliliters of Luffa acutangula decoction are administered. Hepatomegaly, splenomegaly, and inflammation of the stomach mucosa are treated with a dose of 10–20 milliliters of the koshataki plant's fruit juice.

Ten to fifteen milliliters of fruit juice are administered to induce vomiting and alleviate asthma symptoms. To treat intestinal worm infestation, 10 milliliters of the fruit's juice are administered.

To cure insect bites and localized swelling, Luffa acutangula leaf paste is administered externally. Many recipes call for the non-bitter type of kosataki, which is used as a vegetable. To relieve headaches, ridge gourd seeds are mashed and given as nasya. For the same reason, the fruit juice is also given as Nasya, or nasal drops.

SIDE EFFECTS

Side effects of ridge gourd: As this type can result in vomiting and purging, thus care must be used when administering koshataki-containing medications to small children, the elderly, pregnant women, and patients with heart conditions or other systemic illnesses. Formulations containing koshataki should not be taken by people who have diarrhea vomiting. However, the non-bitter type of koshataki, which is used as a vegetable, has no negative effects.(37).

CONCLUSION

Luffa acutangula, widely known as ridge gourd, has been recognized for its diverse ethnomedicinal applications and pharmacological potential. Traditional uses in treating diabetes, liver disorders, inflammation, infections, and skin ailments are increasingly supported by scientific evidence demonstrating its hepatoprotective, antidiabetic, antioxidant, anticancer, antimicrobial, analgesic, and immunomodulatory activities. These therapeutic properties are largely attributed to its rich phytochemical composition, including flavonoids, saponins, alkaloids, and cucurbitacins. However, most findings are based on preclinical studies, and clinical validation is still limited. To establish its efficacy and safety as a standardized herbal drug, further

investigations involving well-designed clinical trials, isolation of bioactive compounds, and mechanistic studies are necessary. Overall, Luffa acutangula remains a promising medicinal plant with significant potential for development into novel therapeutic agents.

REFERENCES

1. A review on Luffa acutangula: A potential medicinal plant [Internet]. Share.google. 2019 [cited 2025 Aug 13]. Available from: https://share.google/KtL5uU4ryi4CWgb5v
2. J. Anitha, S. Miruthula. Traditional medicinal uses, phytochemical profile and Pharmacological activities of Luffa acutangula linn. International Journal of Pharmacognosy . 2014;1(3):174–83.
3. Invasive Species Compendium, Luffa acutangula, https://www.cabi.org/isc/ datasheet/31692
4. Manikandaselvi.s, vadivel.v, brindha. P, "Review on luffa acutangula L"Ethanobotony phytochemistry, nutritional value and pharmacological property, ISSN: 0976 822X, 7(3): 152-155
5. Kumar.s.y.r, Acharya M V "Genus luffa- an ethanopharmacological and phytochemical review" ISSN: 0975-9492, May 2015; 7(5)
6. Flora of China, Luffa acutangula, Luffa acutangula, http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200022697
7. Nadkarni A. 1996. Dr. K. M. Nadkarni's Indian materia medica: with ayurvedic, unani-tibbi, siddha, allopathic, homeopathic, naturopathic & home remedies, appendices & indexes. 1. Pop. Prakashan1:751–752.
8. Pharma Science Monitor [Internet]. www.pharmasm.com. Available from: http://www.pharmasm.com
9. Vanajothi R, Srinivasan P. 2015. Bioassay-guided isolation and identification of bioactive compound from aerial parts of against lung cancer cell line NCI-H460. Journal of Receptor and Signal Transduction Research, 3 5 : 2 9 5– 3 0 2 . d o i : 10.3109/10799893.2014.977451.
10. Kamel BS, Blackman B. 1982. Nutritional and oil characteristics of the seeds of angled Luffa Luffa acutangula, Food Chemistry 9:277–282. doi: 10.1016/0308-8146(82)900784.
11. Nagao T, Tanaka R, Iwase Y, Hanazono, H, Okabe H. 1991. Studies on the constituents of Luffa acutangula Roxb. I. Structures of acutosides A–G, oleanane-type triterpene saponins isolated from the herb. Chemical and Pharmaceutical Bulletin 39:599–606. doi: 10.1248/cpb.39.599.
12. Fernando L, Grun I. 2001. Headspace–SPME analysis of volatiles of the ridge gourd (Luffa acutangula) and bitter gourd (Momordica charantia) flowers. Flavour and Fragrance Journal, 16:289–293. doi: 10.1002/ffj.999
13. Kalasakar M, Surana S. 2014. Free radical scavenging, immunomodulatory activity and chemical composition of Luffa acutangula Var. amara (Cucurbitaceae) pericarp. Journal of the Chilean Chemical Society,59:2299–2302. doi: 10.4067/S0717-97072014000100012.
14. Bulbul J, Zulfiker A, Hamid K, Khatun M, Begum Y. 2011. Comparative study of in vitro antioxidant, antibacterial and cytotoxic activity of two bangladeshi medicinal plants- Luffa cylindrica L. and Luffa acutangula. Pharmacognosy Journal, 3:59–66. doi: 10.5530/pj.2011.23.9.
15. Nagarajaiah B, Prakash J. 2014. Chemical composition and bioactive potential of dehydrated peels of Benincasa hispida Luffa acutangula , , and Sechium edule . Journal of Herbs, Spices & Medicinal Plants 21:193–202. doi: 10.1080/10496475. 2014.940437.
16. Iyyamperumal U, Periyannanc M, Ilavarasand R. 2013. Antiinflammatory and in vitro antioxidant potential of extracts leaves of Luffa acutangula (var) amara in rodent model (rats). International Journal of Pharmacy and Pharmaceutical Sciences 5(Suppl. 2):79–83.
17. Jadhav B, Thakare N, Suralkar A, Deshpande D, Naik R. 2010. Hepatoprotective activity of Luffa acutangula against CCl4 and rifampicin induced liver toxicity in rats: a biochemical and histopathological evaluation. Indian Journal of Experimental Biology 48:822–829.
18. Mishra B, Mukerjee A. 2017. In vivo and ex vivo evaluation of Luffa acutangula fruit extract and its fractions for hepatoprotective activity in wistar rats. International Journal of Pharmaceutical Science and Research, 8:5227–5233.
19. Ulaganathan I, Divya D, Radha K, Vijayakumar T, Dhanaraju M. 2010. Protective effect of Luffa acutangula against carbon tetrachlorideinduced hepatotoxicity in experimental rats. Research Journal of Biological Sciences, 5:615–624. doi: 10.3923/rjbsci.2010.615.624.
20. Sharmin R, Khan M, Akhter M, Alim A, Islam M, Anisuzzaman A. 2013. Hypoglycemic and hypolipidemic effects of cucumber, white pumpkin and ridge gourd in alloxan induced diabetic rats. Journal of Scientific Research,5:161–170.
21. Juma A, Pervin R, Azad M, Islam M, Rahman S, Kabir M. 2013. Antihyperglycemic and antinociceptive activity of methanolic extract of Luffa acutangula fruits. Advances in Natural and Applied Sciences, 7:435–441.

22. Pimple B, Kadam P, Patil M. 2011. Antidiabetic and antihyperlipidemic activity of Luffa acutangula in streptozotocin induced NIDDM rats. Asian Journal of Pharmaceutical and Clinical Research, 4:156–163.
23. Ibrahim M, Abid M, Abid Z, Ahamed M.F, Aara A,(2014) phytochemical and heptoprotective activity of fruit extract of luffa acutangula roxb.var.amara J. med. pharm. Inn 1 49-56
24. Mohan RajS., Mohammed S., Vinoth kumar S. Santhosh Kumar C., Debnath S (2012). Antidiabetic effect of luffa acutangula fruit and histology of organ in streptozotocin induced diabetic in rats .Res. J.Pharmacogn. Phytochem. 4 64-69.
25. Patil P., Patel M., Bhavasar C. (2010). Comparative antidiabetic activity of some herbal extract Int.J.pharm.sci. 1 12-19.
26. Quanico J, Amor E, Perez G. 2008. Analgesic and hypoglycemic activities of , Bixa orellana Kyllinga monocephala acutangula , . Philippine Journal of Science 137:69–76.
27. Singh H, Arora S, Mani M, Mahaur K, Chandra P. 2014. Development of multicomponent formulation of herbal drugs for evaluation of antidiabetic activity. The Pharma Letter. 6:219–223.
28. Dashora N, Chauhan L. 2015. In vitro antioxidant and in vivo anti-tumor activity of Luffa acutangula against Dalton's Lymphoma Ascites (DLA) cells bearing mice. Journal of Chemical and Pharmaceutical Research, 7:940–945
29. Vanajothi R, Sudhaa A, Manikandanb R, Rameshthangamc P, Srinivasana P. 2012. Luffa acutangula and Lippia nodiflora leaf extract induces growth inhibitory effect through induction of apoptosis on human lung cancer cell line. Biomedicine & Preventive Nutrition, 2:287–293. doi: 10.1016/j.bionut.2012.03.002..
30. Gill S, Arora R, Kumar R. 2011. Evaluation of antioxidant, antiinflammatory and analgesic potential of the Luffa acutangula Roxb. Var. amra. Phytochemistry 5:201–208. doi: 10.3923/rjphyto.2011.201.208.
31. Moideen R, Prabha A. 2014. Green synthesis of silver nano particles using Luffa acutangula roxb. var. amara. lin and its antibacterial activity. International Journal of Pharmacy and Biological Sciences, 5:1051–1061.
32. Jadhav S, Chavan N. 2013. Evaluation of antimicrobial activity of Luffa acutangula (L.) Roxb. var. amara (Roxb.) Clarke. International Journal of Advanced Research1:323–326.
33. Dandge S, Rothe P, Pethe A. 2012. Antimicrobial activity and pharmacognostic study of Luffa acutangula (l) Roxb var amara on some deuteromycetes fungi. International Journal of Innovation Science . Discover. 2:191–195. Nn
34. Torvi J, Hunashal R. 2012. A study on antimicrobial activity of extracts of Luffa acutangula var amara fruits. International Journal of Pharma and Bio Sciences 3:678–685.
35. Misar A, Upadhye A, Mujumdar A. 2004. CNS depressant activity of ethanol extract of Luffa acutangula fruits in mice. Indian Journal of Pharmaceutical Sciences, 66:463–465.
36. Pimple B, Kadam P, Patil M. 2012. Protective effect of Luffa acutangula extracts on gastric ulceration in NIDDM rats: role of gastric mucosal glycolproteins and antioxidants. Asian Pacific Journal of Tropical Medicine, 5:610–615. doi: 10.1016/S1995-7645(12)60126-6.
37. Dr J V Hebbar M D (Ayu. Ridge Gourd: Benefits, Remedies, Research, Side Effects [Internet]. Easy Ayurveda Hospital. 2016. Available from: https://www.easyayurveda.com/2016/09/21/ridge-gourd-luffa-acutangula-benefits-research/