

# Pharmacological and Therapeutic Potential of *Trapa Bispinosa*: A Review

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**Abstract:** *The water chestnut is a perennial aquatic plant (Trapa natans var. Bispinosa Roxb.). By concentrating on its nutritional makeup, therapeutic qualities, and possible contributions to enhancing general wellness, this study seeks to clarify the health advantages of water chestnut. Essential nutrients like vitamins B6, C, and E, as well as minerals like potassium, phosphorus, and magnesium, are abundant in water chestnuts. Antioxidants are essential for lowering inflammation, which has been connected to a number of illnesses, such as arthritis and heart disease. Water chestnuts' anti-inflammatory qualities may help reduce the symptoms of these illnesses and enhance general well-being. While dietary fiber helps control cholesterol, potassium content helps control blood pressure. These elements support a more robust heart. Issues with the kidney, liver, spleen, genitourinary system, and stomach. It has antiseptic, diuretic, stomachic, astringent, bitter, and febrifuge properties. For gonorrhoea, menorrhagia, and other genital affections, the entire plant is used. Wounds, ulcers, ophthalmopathy, diarrhea, and dysentery can all benefit from it.*

**Keywords:** Water chestnuts; nutritional value; uses; health benefit

## I. INTRODUCTION

Water chestnut (*Trapa natans var. Bispinosa Roxb.*) is an economically significant aquatic fruit crop in India, belonging to the family Trapaceae. Commonly known as Singhara in Hindi, it is believed to have originated in India, China, and Eurasia. It is a free-floating annual aquatic plant that typically grows in shallow fields, ponds, and swampy environments, thriving in nutrient-rich water with a pH range of 6.7–8.2<sup>(1)</sup>

In India, water chestnut is extensively cultivated in Madhya Pradesh, Uttar Pradesh, Bihar, Odisha, West Bengal, Jharkhand, Karnataka, and Jammu & Kashmir. Beyond India, it is commercially cultivated in tropical regions such as Pakistan, Sri Lanka, Indonesia, and parts of Africa. The crop is also widespread in Indonesia, Southeast Asia, southern China, and the eutrophic waterways of Japan, Italy, and tropical America. Moreover, it has naturalized in parts of the Eastern United States, where it flourishes under tropical and subtropical conditions (Takano and Kadono, 2005).<sup>(1)</sup> *Water chestnut*, or *Trapa bispinosa*, is an annual aquatic plant with floating leaves that grows in freshwater wetlands, lakes, ponds, and slow-moving riverbeds in India. An aquatic floating herb, *Trapa bispinosa* is a member of the Trapaceae family. With a flexuous stem that rises in the water, it has many opposing pairs of pectinate organs that spread like green roots in its submerged sections. The upper portion of the stem is covered in densely packed, alternating leaves.

Rhomboid, 3.8–5 cm long, a little truncated at the base, irregularly inciso-serrate, reddish-purple underneath, with a dilated petiole close to the apex. There are only a few auxiliary, single, white flowers. The oblong, angular, 2.25 cm long, broad fruits have a spreading, flattened, extremely sharp spinous horn on either side.<sup>(2)</sup>

Nutritionally, fresh water chestnuts are rich in water (80%) (Paste, 2004), starch (52%), protein (1.87%), and total soluble solids (7–8%) (Singh et al., 2010). They are also an excellent source of dietary fibre, vitamin B, calcium (Ca), potassium (K), iron (Fe), and zinc (Adkar et al., 2014; Alfasane et al., 2011). On average, fresh chestnuts contain 4.40% protein and 22.3% carbohydrates. Fibre content varies slightly between varieties, with the green type containing 2.13% and the red type 2.27%. Water chestnut flour is particularly valued for its high potassium and fibre content, and



one cup of sliced water chestnuts provides approximately 130 calories. In India, Singhara flour is traditionally consumed during fasting periods (Singh, 2017).<sup>(1)</sup> The fruit, a hard, spiky nut-like structure with four sharp, barbed horns, is the most characteristic feature of *Trapa natans*. Because they resemble chestnuts, these fruits are known as “*water chestnuts*” informally. Freshwater environments such as ponds, lakes, marshes, and slowly flowing rivers are its primary habitats (Malviya, 2010).<sup>(4)</sup> It favors shallow waters with substrates that are silty or muddy. This plant is indigenous to parts of Europe and Asia, including Southeast Asia, China, Japan, and India. It can spread quickly and supplant native aquatic plants, making it an invasive species in some places.<sup>(3)</sup>



**FIGURE 1: Whole plant *Trapa bispinosa*.**

Beyond its nutritional profile, water chestnut also exhibits therapeutic properties. It is a natural source of flavonoids and antioxidants, which contribute to its nutraceutical potential.<sup>(5)</sup> Pharmacological studies have demonstrated its strong antiulcer activity, significantly reducing ulcer indices in pyloric ligation and aspirin-induced ulcer models. Additionally, both red and green varieties possess antibacterial properties. Quantitative analysis further confirms its richness in essential minerals such as sodium, potassium, calcium, phosphorus, and iron, highlighting its importance as both a food and medicinal resource.

The nutritional composition of water chestnut (WCN) green and red varieties was evaluated, focusing on minerals (manganese, copper, zinc) and vitamins (vitamin C, B6, B2, B3, vitamin A, and  $\beta$ -carotene). Results showed notable differences between the two varieties. The WCN green variety contained significantly higher levels of protein (1.72%), fat (0.65%), dietary fiber (2.21%), moisture (70.23%), ash (1.16%), and energy (112.8 Kcal) compared to the red variety. Similarly, the macro- and micromineral contents were considerably higher in WCN green than in WCN red. Among all minerals assessed, potassium was the most abundant in both varieties (Rehman et al., 2024).<sup>(1)</sup>



## 2. BOTANICAL DESCRIPTION:-

*Trapa bispinosa* (water chestnut) was first brought from Europe as an ornamental plant. Although its nuts usually sink, the plant spread and grew well in the Northeastern United States. In ancient China, during the Zhou Dynasty, water chestnut was important in prayers. A text from the Zhou period (2nd century BC) mentioned that worshippers should use bamboo baskets filled with dried water chestnuts.

In India, water chestnut is called singhara or paniphal. It is widely grown in freshwater lakes. The fruits can be eaten raw or boiled. When dried and ground into flour (called singhara atta), it is used in many religious rituals and eaten during fasting days like the Hindu festival Navratri. *Trapa bispinosa* originally comes from Eurasia. It was introduced to North America in the 1870s and was grown in a botanical garden at Harvard University in 1877. Later, it spread naturally and was found growing in the Charles River by 1879.(1)



**FIGURE 2: flower and fruit**

## 3. Morphology

**Stem:** Growing upward through the water, the stem is spongy. Numerous green, root-like structures known as pectinate organs are present in the submerged portions, which aid in the plant's anchoring to the lakebed.

**Leaves:** At the top of the stem, the leaves are closely clustered and alternate. They have a reddish-purple underside, a rhomboid to deltoid-rhombic shape, and serrated or unevenly toothed margins.

**Flower :** Blooming just above the water's surface, the tiny, white, solitary flowers emerge in the leaf axils.

**Fruit:** Two sharp, barbed, horizontal "horns" at the apex of a hard, triangular to oblong drupe characterize this fruit. The seed's interior is white and starchy.

## 4. NUTRITIONAL VALUE :-

In many Asian countries, such as China, Thailand, and India, water chestnuts are grown for their nutritional value and culinary appeal. Due to their low calorie content and high dietary fiber content, water chestnuts are a nutritious addition to a variety of recipes. They also contain certain vitamins, like vitamin B6 and vitamin C, and minerals, like manganese and potassium.<sup>(5)</sup>

**Rich of Nutrients:** Water chestnuts have important minerals like potassium, phosphorus, and magnesium, along with vitamins B6, C, and E.



**Antioxidants:** They contain natural compounds that fight stress and swelling in the body, which helps the heart and may lower the chance of problems like arthritis.

**High water Content:** Since they have a high water content, water chestnuts help keep the body hydrated. This is especially useful in hot weather or during exercise.

**Good Fiber Source:** The fiber in water chestnuts helps control cholesterol levels and supports healthy digestion.<sup>(4)</sup>

## **5. HABITAT :-**

*Trapa bispinosa* Roxb. (Family: Trapaceae) is native to India and is locally known as “Paniphal.” It grows abundantly in the lakes of Kashmir and is widely cultivated in many tropical regions such as Pakistan, Sri Lanka, Indonesia, and parts of Africa. The plant is also common in Southeast Asia, southern China, and in nutrient-rich waters of Japan, Italy, and tropical America. In addition, it has naturalized in some regions of the Eastern United States.

In India, it is commercially grown for its seasonal fruit, commonly called “singhara,” which is valued as a nutritious food containing carbohydrates, proteins, and vitamins. The plant floats just below the water surface, forming dense mats in water bodies. Its upper leaves spread in a circular, star-like pattern on the surface, supported by swollen, air-filled petioles that help it stay afloat.<sup>(6)</sup> *Trapa bispinosa* was first reported in North America in 1884 at Sanders Lake, Schenectady, New York, where it grew extensively. From there, it spread across several states in the Northeastern United States, including Connecticut, Delaware, Maryland, Massachusetts, New Hampshire, Pennsylvania, Vermont, Virginia, and Washington D.C. It has also established in the Great Lakes Basin and was recently identified in Quebec, Canada.<sup>(2)</sup>

## **HISTORICAL PERSPECTIVES :-**

*Trapa bispinosa*, originally introduced from Europe as an ornamental plant, has established and spread across the Northeastern states despite its limited dispersal due to large, sinking nuts. Historically, during China’s Zhou Dynasty, the water caltrop held religious significance and was used as an offering in worship rituals. Ancient texts such as the Rites of Zhou (2<sup>nd</sup> century BC) mention the use of bamboo baskets filled with dried water caltrops for these ceremonies. In India, the plant is known as singhara or paniphal (especially in eastern regions) and is extensively cultivated in freshwater lakes. Its fruits are commonly eaten raw or boiled, and when dried, they are ground into a flour called Singhara ka atta. This flour is traditionally used in religious rituals and serves as a key ingredient in Phalahar diets consumed during Hindu fasting periods such as the Navratri festival.<sup>(7)</sup>

## **6. MEDICAL VALUE :-**

In folk medicine, the entire fruit and herb has been acknowledged for its therapeutic value as a remedy for a number of illnesses.<sup>(8)</sup> According to reports, the entire herb has hepatoprotective, antimicrobial, antibacterial, antitumor, antioxidant, and free radical scavenging properties (Razvy et al., 2011)<sup>(9)</sup> The fruits have been used to treat anemia, fractures, bronchitis, urinary discharges, intestinal astringency, aphrodisiacs, anti-inflammatory, and anti-diarrheal conditions (Kirtikar et al., 2006).<sup>(10)</sup> It has been determined that the fruits of *T. Bispinosa* are the Ayurvedic medication Shurangataka. Additionally, it is said to have anti-cancer qualities. Stem juice is used in preparations for eye care.

### **6.1 Lower the Chance of Heart Disease :-**

Modernization has raised the risk of chronic illnesses like heart disease, which are now among the world’s leading causes of death. Many things, such as high blood pressure, high blood cholesterol, and high blood triglycerides, can lead to heart problems. Due to its high potassium content, the water chestnut is one of the most significant fruits in terms of its ability to help regulate blood pressure. Lowering blood pressure and stroke risk may reduce the chance of heart disease, according to research. According to a study, people with high blood



pressure who drank more potassium had a lower risk of heart stroke and a lower systolic and diastolic blood pressure by 3.49 mmHg and 1.96 mmHg, respectively. People who consumed more potassium had a 21% lower risk of heart attack and heart disease, according to another review of 11 studies (Rani et al., 2016).<sup>(8)</sup>

### **6.2 Antioxidant Characteristic :-**

The amount of flavones, flavonoids, and total phenol in water chestnuts is high. It was discovered that the fruit pericarp extract contained tannins, flavonoids and glycosides, alkaloids, saponins, steroids, and phenol compounds, while the water chestnut fruit seed extract contained carbohydrates, saponins, phytosterols, fixed oils, and fat (Hussain et al., 2018).<sup>(11)</sup>

### **6.3 Properties that Prevent Diabetes :-**

In rats with diabetes induced by streptozotocin, water chestnut fruit peel extract demonstrated anti-diabetic effects. The ability of the ethanolic extract of water chestnut roots and fractions to prevent hypoglycemia and slow the progression of hyperglycaemia is one of the most notable benefits (Das et al., 2011).<sup>(12)</sup>

Water chestnut's anti-hyperglycemic qualities are explained by the presence of ferulic and caffeic acids. Although caffeic acid has a generative effect on Langerhans islets due to decreased expression of glucose transporter 2 in the liver, which lowers hyperglycemia, ferulic acid is known to minimize oxidative stress and hyperglycemic response (Corovic et al., 2021).<sup>(13)</sup>

### **6.4 Anti-Ulcer Activity :-**

The antiulcer properties of *Trapa bispinosa* fruits were tested in the study using Wistar rats. The aspirin plus pyloric ligation and pyloric ligation plus pyloric ligation models were used to assess the antiulcer activity of 50% ethanolic extract at two dosage levels.

The significant antiulcer effect of the test extract may have been caused by changes in the mucosal barrier of the stomach and an increase in carbohydrates. According to the research, Ethanolic fruit extract from *Trapa bispinosa* may have antiulcer properties (Kar et al., 2010).<sup>(14)</sup>

### **6.5 Properties of Antimicrobials :-**

Due to its abundance of active compounds, water chestnut leaf extract may find application in microbial control. The origin of biologically Specifically, the bacteria under investigation showed antimicrobial activity.

This effect was particularly noticeable in gram-negative bacteria, such as *Pseudomonas aeruginosa* (Radojevic et al., 2016).<sup>(15)</sup> According to Aleksic et al. (2018), water chestnut leaf extracts' anti-quorum sensing properties prevent the pathogen *P. Aeruginosa* from producing numerous virulence factors necessary for infection progression.

The reference used was kanamycin (Razvy et al., 2011).<sup>(9)</sup> To assess the fruit extract from the green and red water chestnut varieties' antibacterial properties. The disc diffusion approach was used. The disc diffusion approach was used. Both *Shigella sonnei* and *Staphylococcus aureus* were most susceptible to the antibacterial activity (12 mm) of the green variety of water chestnuts, while *Bacillus subtilis* was most susceptible to the extract from the red variety (31 mm).

### **6.6 Anti-inflammatory Properties:-**

Phenolic substances, including gallic acid, were present in water chestnut extracts. It seems that gallic acid has antiviral, anti-inflammatory, anti-cancer, and antioxidant properties (Chuang et al., 2010).<sup>(16)</sup>

Gallic acid, found in water chestnut extract, has been used to treat inflammatory skin conditions because of its strong anti-inflammatory properties (Kim et al., 2015).<sup>(17)</sup>

### **6.7 Activity of analgesic:-**

The methanolic extract of *Trapa natans* L. Var. *Bispinosa* Roxb. Roots had shown potential Analgesic effect on the animals under test. Analgesic activity of the methanolic extract of the *T. Bispinosa* root at a dose of 200 mg/kg and 400 mg/kg was evaluated by tail flick and tail immersion method against the standard drug Pentazocine at a dose of 30 mg/kg.

The result indicate a notable analgesic effect that the centrally acting medication demonstrated.



**6.8 Activity of Enzymes:-**

Amylase, cellulose, invertase, lipase, and protease were among the enzymes whose activities were examined two types of water chestnuts (red and green) that are readily available locally, as well as Asian aquatic fruits. Well-liked for its therapeutic and nutritional qualities. Every enzyme activity that was examined was discovered that the green variety was marginally higher than the red variety.

**7. USES OF WATER CHESTNUT :-**

**1. In Food**

Water chestnuts are used as a grain substitute during fasting in the Indian subcontinent. Water chestnuts might be a better choice for people with wheat four (WF), which is linked to an issue with the digestion of gluten (a) wheat protein. Mir and colleagues (2015) and Gul and colleagues (2014).<sup>(18)</sup> During Navratri and other fasting holidays in India.



FIGURE 3: The different part of Trapa Bispinosa

Water chestnut cookies are now considered a specialty dish. The high starch content and gluten-free nature of water chestnut four (WCF) make it a promising ingredient for gluten-free bread products. Its use in the dishes is further supported by its higher content and variety of nutritional benefits. Because water chestnut cookies have a higher spreading ratio than WF cookies, there is an increase in demand for these cookies.

Table 1. :- Nutrient profile of 100g of Water Chestnut (IFCT 2017).

Sr. No.	Nutrient	Amount per 100 g
1.	Protein	0.86g
2.	Carbohydrates	21.46g
3.	Total fat	0.37g
4.	Energy	95.6kcal



5.	Calcium	37.15mg
6.	Phosphorus	62.83mg
7.	Iron	0.77mg
8.	Vitamin C	5.26mg
9.	Total fiber	3.02g

Table 2. :- Nutritional Value of Green and Red Variety (Rehman et al. 2024)<sup>(19)</sup>

Sr. No.	Nutrient	Green variety	Red variety
1.	Moisture (%)	70.23	68.74
2.	Fat (%)	0.65	0.54
3.	Starch (%)	19.52	21.99
4.	Protein (%)	1.72	1.18
5.	Fibre (%)	2.21	2.04
Macro Minerals (mg/100g)			
1.	Na	3.11	2.51
2.	Ca	49.27	34.20
3.	K	392.04	315.01
4.	P	132.04	118.00
Micro Minerals (ug/g)			
1.	Fe	43.33	40.10
2.	Mn	79.66	95.00
3.	Zn	31.33	35.33
4.	Cu	23.66	20.33

## 2. Value added product:-

Gastronomic and nutritional advantages can be acquired from goods with added value manufactured from Another name for *Trapa natans* is water chestnut. The edible portions of the plant, such as the seeds or corms. These are typically made from spiky fruit. Products. Some water chestnuts are on this list. goods with additional value.<sup>(20)</sup>

## 3. Snacks on water chestnuts:-

Cutting and drying water chestnuts will result in crispy, healthy snacks. These foods often have seasoning or flavoring added to enhance their flavour. They are a healthier alternative to traditional potato chips and are delicious and crispy.

## 4. Chips made from water chestnut:-

Water chestnut chips are thinly sliced water chestnuts that have been dried or deep-fried to create crispy chips. Once seasoned, these chips can be used as a snack or as a garnish in salads and appetizers.

## 5. Water chestnut paste:-

Water chestnut paste is a purée made from water chestnut flesh. It forms the basis of many sweets and desserts, especially in Asian cuisines. It can be used to flavour and sweeten buns, dumplings, and pastry fillings (Mondal et al., 2024).<sup>(21)</sup>



## 8. PHARMACOLOGY:-

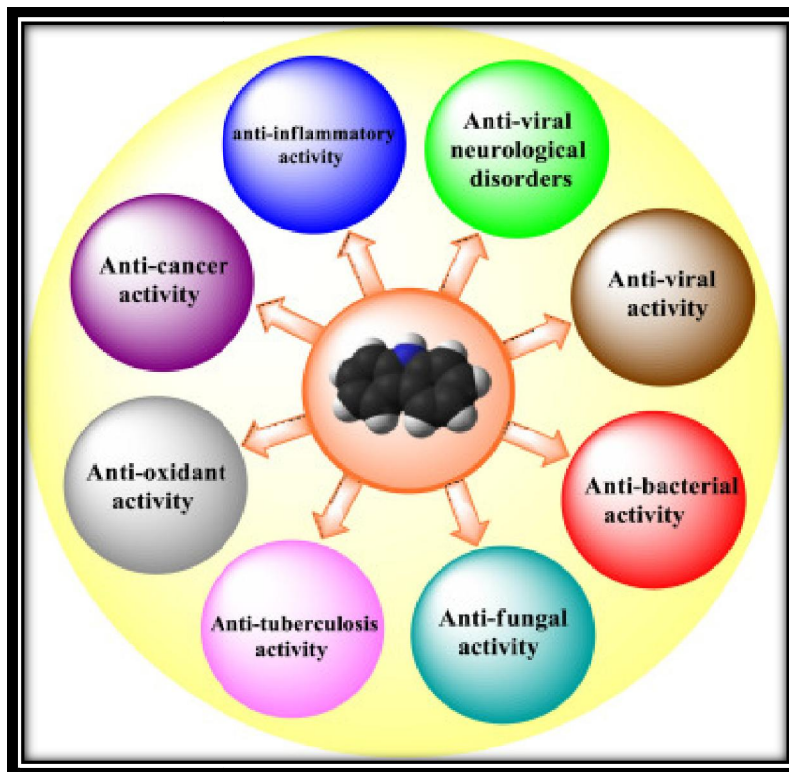


FIGURE 4:- Pharmacological properties of Trapa Bispinosa

### 8.1: Acute Oral Toxicology Research:

Water chestnuts contain significant amounts of flavonoids, flavones, and total phenol. On the other hand, tannins were detected in the water chestnut fruits' pericarp extract. Phytochemical screening of the water chestnut fruit seed extract identified the presence of carbohydrates, saponins, phytosterols, fixed oils, and fat in addition to flavonoids and glycosides, alkaloids, saponins, steroids, and phenolic compounds.<sup>(22)</sup>

### 8.2: Pain Relief Action:

The standard medication pentazocine at a dose of 30 mg/kg was compared to the analgesic activity of the T. Hispinasa root methanolic extract at 200 and 400 mg/kg. Six adult Swiss albino mice of each sex were selected for the study and assessed using the tail flick and tail immersion techniques.<sup>(23)</sup>

### 8.3: Activity against diabetes:

The effect of methanol extract of T. Natans fruit peels (METN) on oral glucose tolerance and its effect on normoglycemic rats were investigated in order to assess the antidiabetic activity of METN in Wistar rats. A single intraperitoneal injection of streptozotocin caused rats to develop diabetes. The hyperglycemic rats were given oral METN at doses of 100 and 200 mg/kg body weight every day for 15 days following STZ induction.

### 8.4: Antiulcer Properties:

Wistar rats were used to test the fruits of Trapa bispinosa for their antiulcer properties. Pyloric ligation and aspirin plus pyloric ligation models were used to assess the antiulcer activity of 50% ethanolic extract at two dose levels. Significant antiulcer activity was found in the test extract, which may be the result of altered



stomach mucosal barrier conditions and an increase in total carbohydrate content. The findings suggest that *Trapa bispinosa* fruit ethanolic extract has possible antiulcer properties.<sup>(15)</sup>

#### 8.5: Antifungal and Antimicrobial Activity

In recent years, attempts have been made to investigate indigenous drugs against infectious disease. *Trapa bispinosa* can be used as an antimicrobial agent.<sup>(24)</sup> Which has evaluated antifungal activity of fruit extracts of different water chestnut varieties. A strong antifungal activity of ethanol and petroleum extract was found against the treated fungi resulting in remarkable inhibition zone in comparison to both dithane-Mfungicide and control. It was also evident that wild variety of water chestnut was comparatively more efficient in respect to antifungal activity compared to the red and green varieties of the same plant<sup>(25)</sup>. It was mentioned that the extracts of *Trapa bispinosa* showed interesting antimicrobial activity against Gram-positive and Gram-negative test organisms and significant cytotoxic activity.<sup>(24)</sup>

#### 8.6: Antimicrobial Properties

Using the disc diffusion method from methanol extract, the antibacterial properties of the fruit extract of two water chestnut varieties (red and green) were investigated. At a concentration of 600 microns, the extract of the red variety of water chestnut demonstrated strong antibacterial activity (31 mm) against *Bacillus subtilis*. At 600 micrograms of standard Kanamycin, the other green variety exhibited the strongest antibacterial activity (1 against both *Shigella sonnei* and *Staphylococcus aureus*). The methanol extract of the red variety of water chestnut was found to have a significant antibacterial efficiency in this disc diffusion assay when compared to the extract of the green variety. These results demonstrate how effectively these extracts prevent the growth of microorganisms.<sup>(24)</sup>

#### 8.7: The activity of enzymes

In two locally accessible varieties (green and red) of water chestnuts Asian aquatic fruits well-known for their nutritional value and therapeutic qualities the activities of several enzymes, including amylase, cellulase, invertase, lipase, and protease, were investigated. In comparison to the red variety, the green variety showed slightly higher levels of all tested enzyme activities. According to the enzyme activity assay, water chestnuts may serve as a source of several enzymes, including lipase, cellulase, invertase, amylase, and protease. These enzyme activities may play a significant role in assessing the water chestnuts' nutritional and therapeutic worth.

### 9. PHYTOCHEMICAL COMPOSITION :-<sup>(26)</sup>

Compound Group	Example/Constituents	Approx. Content or Remark
Saponins	Saponins	36.92 ± 0.67%
Alkaloids	Alkaloids	0.775 ± 0.33%
Polyphenols	Gallic acid, caffeic acid, ellagic acid	67 mg/g (as gallic acid equivalents)
Tannins	Tannins	17.11 mg/g (in fruit), present in pericarp
Carbohydrates	Starch, reducing sugars	22.3–71.55% (fresh to dry fruit)
Fixed oils & fats	Oils, fat	Present
Proteins		4.40–10.80% (fresh to dry fruit)
Glycosides	Glycosides	Present (not quantitatively specified)
Steroids	Steroids	Present (not quantitatively specified)
Vitamins	B1, B2, B5, B6, E, A, C	Plentiful; thiamine listed

### 10. APPLICATION:-

**Digestive Health:** It helps treat diarrhea, stomach ulcers, and indigestion because it calms the stomach and reduces irritation.

**Urinary and Reproductive Health:** It is used to relieve painful or frequent urination and helps with menstrual problems.



**Reduces Inflammation and Fights Infections:** It helps reduce swelling, heal wounds and ulcers, and fights infections like sore throat, bronchitis, and skin problems.

**Supports Liver and Kidney Health:** It aids in protecting and detoxifying the liver and kidneys.

**Boosts Immunity and Fights Oxidative Stress:** Its rich antioxidant content helps strengthen the immune system and protect the body from damage caused by free radicals.<sup>(27)</sup>

## II. CONCLUSION

In conclusion, water chestnut emerges as a highly nutritious food with multiple health benefits. It is positioned as a functional food that can help prevent disease and improve general health because of its rich nutritional profile, antioxidant, anti-inflammatory, and hydrating qualities. As more people become aware of these advantages, more research is necessary to determine the mechanisms underlying their health benefits and to support water chestnuts as an important part of a healthy diet.

Water chestnuts may become more widely known and used in health-conscious cooking techniques as a result of this investigation. As more people learn about the health benefits of water chestnuts, it's likely that their use in cooking will rise.

The systematic review of Unani, Ayurvedic literature indicates that *Trapa bispinosa* has immense potential in the treatment of conditions such as diarrhoea, sexual debility, general debility, sore throat. The recent pharmacological studies reveal that this has important analgesic, antibiotic, antidiabetic and immunomodulatory activities.

The global interest toward traditional medicines is increasing due to the safe and time tested remedies with lesser side effects. This review directs. *Trapa bispinosa* as a potentially safe and effective plant that has immense medicinal and nutritional values and benefits.

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