

Nutritional and Pharmacological Aspects of Water Chestnut

Zeeshan. M Ullah Habib Aarfa shan Idrees. M khan Saad Ali Ejaz Virdah
Raza Ali khalid Shaheer Ali Imdad *Hameed Rizwan *Nawaz Husnain
Department of Microbiology and Molecular Genetics, University of Okara, Okara, 56130 Punjab, Pakistan

DOI: 10.7176/JBAH/10-10-02
Publication date: May 31st 2020

Preface

Nature has its remarkable approaches to fix and evade practically all issues of people. The populace is expanding rapidly, lacking stock of medications, high treatment costs, and symptoms alongside dope fight have been experienced in man-made narcotics, which has prompted a raised significance for the utilization of plants to treat human disorders. The remedial forces of conventional herbs have been perceived since antiquated occasions. This survey features the conventional and pharmacological record of a significant plant Trapanatans known as water chestnut (English), singhara (Urdu) family Trapaceae, Subfamily Rosidae and Division Magnoliophyta. Notwithstanding being an exceptionally nutritious natural product, because of its accessibility for just 2 to 3 months, neglected to get the significance of food handling goliaths.
This plant is a significant wellspring of new synthetic substances with potential curing impacts.

Morphological narration:

Trapanatans is water coasting herb with leaves of two sorts, fantastically partitioned plume-like submerged leaves borne along the length of the stem, and unified gliding leaves borne in a rosette at the water's surface. The gliding leaves are fan-like molded and have saw-like edges, 2 - 6.5cm width, more extensive than long, serrate or chiseled with complete base and villous underneath. Stems of this plant are elastic and light and can arrive at lengths of up to 16 feet (normal length ranges from 6 to 8 feet as it were).

The petioles are appended to the bed of the water by a few parts of the roots. Blossoms are white, very little raised above and wide with a short cone-shaped, with two spines at two edges, the second pair of spines regularly needing.

Seeds can stay feasible for as long as 12 years, albeit most will be developed in the initial two years. The plant degrees by the rosettes and natural products parting from the stem and gliding to various districts on flows or by organic products sticking to items, flying creatures, and creatures.

Distribution:

Trapanatans is water natural product plant, for the most part, found in tropical and sub-tropical zones of the earth. Their normal fluctuate of development incorporates segments of Southern Europe, Africa and, Asia. It been fully-developed in Europe since the Neolithic era and was utilized regularly as foodstuff by the conventional Europeans. As a simple developing plant, it has gotten naturalized in parts of the USA since it was introductorily brought into North America around 1874. It found in moderate waterways, lakes, marshes, lakes and is widely developed in Asia. Water with a pH 7 to 8.2 and alkalinity of 12 to 128 mg/l of calcium carbonate are great for its development.

Chemical formation:

The literature discloses the existence of starches, phytosterols, saponins, fixed oils and fat in seed concentrates and tannins, flavonoids and synthetic compounds in covering concentrate of products of water caltrop that was extra confirmed by thin layer movement examines.

Pharmacological activities:

The following are some important and valuable pharmacological activities depicted by this nutritional plant.

Pain-relieving Activity:

It is accounted for the Pain-relieving movement of methanolic concentrate on the base of water chestnut L.var. bispinosaRoxb by assessing 200mg/kg and 400mg/kg portion on mice against the quality medication pain-relieving at a portion of 30mg/kg. Torment easing movement in the two portions was found to deliver noteworthy ($p<0.01$).

Anti-inflammatory Activity:

In 2010, specialists assessed each spread and seed concentrate of products of water chestnut plant for medicine movement via carrageenan inspired edema expanding with 200mg/kg and 300mg/kg portion. Pericarp

demonstrated a more secure activity than seed.

Antidiabetic Activity:
In 2011, researchers believed the antidiabetic drug activity of Wood alcohol extract of T.natans fruit peels (METN) in STZ elicited polygenic disorder in Wistar rats. MTN at the dose of one hundred and two hundred mg/kg orally considerably (p < zero.001) and dose-dependently improved oral aldohexose tolerance, exhibited symptom impact in traditional rats and antidiabetic drug activity in STZ-induced diabetic rats by reducing and normalizing the elevated abstinence glucose levels as compared to those of STZ management cluster.

Antimicrobial Activity:
In 2007, it was accounted for that prescription movement of different concentrates of water chestnut plant organic product skin by agar plate dispersion philosophy. Most prescription action was found against Gram-negative bacterium. The best antimicrobial movement was with one, 4-dioxin separate and the least action was with rough ether extricate.

Antibacterial Activity:
It was accounted for in 2010 that the medicament action of organic product concentrate of 2 assortments (Green and red) of water chestnut by the plate dissemination strategy from fuel separate exploitation anti-microbial as standard. The concentrate of red sort of water chestnut (600g) demonstrated high medicament potential (31mm) against Bacilli while green determination (600g) indicated most elevated medicament action (12mm) against every *Staph aureus* and enteric microorganism *Sonnie.*

Neuroprotective Effect:
It was accounted for in 2010 that the hydro-alcoholic concentrate (500mg/kg, PO) of family Trapabispnosa constricted unmistakable light item and increment in super-particle peroxidation and rebuilt peroxidase and catalyst action in cortex inside the mind of ladylike abnormal individual mice.

Beneficial aspects of Water Chestnut:
Medicine:
This is used in a few Ayurvedic arrangements as a supplement, canapé, astringent, diuretic, love potion, cooling, antidiarrhoeal and tonic. It's conjointly useful in lumbar torment, pharyngitis, bilious expressions of love, bronchitis, fatigue, and irritation. Plant conciliates vitiated tyrannid, consuming sensation, hemorrhages, skin maladies, low spinal pain. and general unfitness. Natural products additionally are used in making liniments for the fix of stiffness, bruises and burn from the sun. It's conjointly aforementioned to claim malignant growth forestalling properties. The stem is utilized inside the sort of juice in eye issues.

Food and Agriculture:
The organic products territory unit either utilized stewed or broil or might be dried and ground into flour, which is commonly utilized as a substitute for arrowroot flour. The natural products territory unit an extraordinary supply of sustenance with Sixteen Personality Factor Questionnaire starch and two or three superparticles. At the point when crude, the organic products zone unit delicious and fresh, when toasted, the substance mollifies, anyway it despite everything stays new. The pieces zone unit reasonable stockpile of minerals, nutrients, sugars, calcium, phosphate, iron, copper, manganese, magnesium, metallic component and nuclear number 19.cesium, sodium, and potassium.

Concluding remarks:
Trapanatan's organic product might be a savvy supply of foodstuffs and subsequently, the entire plant has changed positive clinical strength impacts. Although it's fluctuated clinical claim to fame impacts, anyway it's the need of the hour to investigate its fortifying qualities at an atomic level with the assistance of changed biotechnological devices and procedures. While exploring underneath alluded examines, it's inferred that the detachment of mixes of this plant should be done and will be utilized for any examinations to clarify the sub-atomic instrument of cooperation of its differed mixes with a natural structure in a few maladies.

References
1. In vitro antimicrobial activity of Trapa natans L. fruit rind extracted in different solvents, African Journal of Biotechnology 2007, Available from: http://www.academicjournals.org/AJB.
2. Water Chestnut (Trapa natans) in the Northeast NYSG Invasive Species Factsheet Series: 06-1, Available from: http://www.waterchestnut.org/Assets/PDF/wcfactsheet.pdf.
3. Evaluation of analgesic activity of methanolic extract of Trapa natans l.var. Bispinosa roxb. Roots. Journal of

Current Pharmaceutical Research 2010; 01: 8-1 [cited 2011 sept 29], Available from: http://jcpronline.com/final/1346570.pdf.

4. Physico-chemical characteristics and sensory quality of Singhara (Trapa natans L.): African Journal of Food Science, November 2010 , Available from: http://www.academicjournals.org/ajfs.
5. Evaluation of anti-inflammatory activity of fruits of Trapa natans linn. International journal of pharmaceutical research and development Available from: http://www.ijprd.com/EVALUATION%20OF%20ANTI-INFLAMMATORY%20ACTIVITY%20OF%20 FRUITS%20OF%20 TRAPA%20NATANS%20LINN.pdf.
6. Antidiabetic Activity of Trapa natans Fruit Peel Extract Against Streptozotocin Induced Diabetic Rats. Global Journal of Pharmacology, Available from: http://idosi.org/gjp/5(3)11/13.pdf.
7. Environment friendly antibacterial activity of water chestnut fruits. Journal of Biodiversity and Environmental Sciences, Available from:http://www.innspub.net/wp-content/uploads/2012/01/JBES-V1-No-1- p26-34.pdf.
8. Effect of Hydro-alcoholic Extract of Dried fruits of Trapa bispinosa Roxb on lipofuscinogensis and fluorescence product in brain of D-galactose induced ageing accelerated mice. , Available from:

9.http://www.niscair.res.in/sciencecommunication/researchjournals/rejo ur/ijeb/ijeb0.asp