

Biofunctional Potential and Utilization of *Sagittaria Sagittifolia* L.

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ABSTRACT

Aquatic flora are the most important forms of plant life, which are used by tribal science ancient time as a source of their day to day significant due to the present of different nutrients, food, biofunctional molecule and photochemical. *Sagittaria sagittifolia* L. (Arrowhead) belonging to family Alismataceae an indigenous plants of north Eastern Terai Region of U.P. The tuber and leaf are the important biofunctional part of this herb. The tuber, leaf and stem contain starch, protein, secondary metabolites and other phytonutrients. The phytochemicals of this plant given many biofunctional dimensions to their use as food, medicine, vegetable and fodder. Therefore Its Utilization, cultivation and conservation have been discussed in present paper.

KEY WORDS: *Sagittaria sagittifolia* L., Phytochemicals, Secondary metabolites

I. INTRODUCTION

Sagittaria sagittifolia L. which belongs to the family Alismataceae is a perennial submersed- floating aquatic plant of temperate and tropical fresh- water wetlands, lakes, ponds, rivers, estuaries native to Asia and Europe, commonly known as Arrowhead. *Sagittaria sagittifolia* L. has been widely gathered for its large nutritious tuber in Chinese traditional medicine to provide alternative therapy for the treatment of many ailment and diseases. Herbal or plant medicine constitutes an effective source of both traditional and modern medicines. It is more popular in rural population and around 80% of rural population in India depends on it for their primary health care. The universal role of biofunctional plant to treat diseases is exemplified by their employment in all the major system of medicine irrespective of the underlying philosophical premise, as for example, Ayurveda, Western medicine, Unani and those of oriental medicines. However, the plant kingdom has got wide attention as a potential source of new drugs. Aquatic medicinal plants constitute an effective source of both traditional and modern medicines. It contains diverse groups of bioactive compounds that possess enormous therapeutic properties. These are much safer than synthetic drug and show lesser side effects. Traditionally the plant has been used in India and china for several important medicinal and therapeutic purposes. It has some biological and pharmacological activities such as Anti-inflammatory, anti-microbial, antioxidant, Immunomodulator, Diuretic, Antiseptic, Antiscorbutic and Antibacterial activities. Paste of leaf is externally applied in different type of skin diseases.

he present study was therefore initiated to evaluate the nutritive value of *S. sagittifolia* L.var. arrowhead. Besides their uses as food item, this aquatic tuberous plant is also exploited for their medicinal properties. Mostly Arrowhead is utilized against various diseases by the local communities through their indigenous knowledge.

BOTANICAL DESCRIPTION

Sagittaria sagittifolia L. is an herbaceous emergent aquatic or semiaquatic perennial, tuber producing plant belonging to monocot family Alismataceae, growing in water from 10-50 cm deep. The leaves are born on triangular stalks that vary in length with depth of the water in which the plant is growing. They do not lie on the water but stand boldly above it. The leaves above water are arrowhead shaped, leaf blade 15-25 cm long and 10-22 cm broad, on a long petiole holding the leaf up to the 45 cm above water level. They are large and arrow-shaped and very glossy. The early, submerged leaves are ribbon like. The flower- stem rises directly from the root and bears several rings of buds and blossoms, three outer sepals and three large, pour white petals, with purple blotch at their base. The upper flowers are stamen bearing, the lower one generally contains the seed vessel. The stamens are numerous and yellow in colour. (2).

DISTRIBUTION

Sagittaria sagittifolia L. is native of Asia and Europe and is mainly widespread from south European Russia to Japan, Malaysia as well as several provinces of China and indigenous to Combodia, China, Fujian, Gansu, Hebei, India, Iran, Japan, Kazakhstan and Nepal. (Zhuang 2011).

USES

TRADITIONAL USES

The *Sagittaria sagittifolia* L. has several traditional uses, almost all the parts of this herbs (stems, leaves, tubers, flowers, seeds) and leaf oil were utilized for many ailments in the indigenous medicine in North East Asia. These parts have used for the treatment of inflammation and infectious human diseases like cardiac circulatory tonic and antiseptic. For instance, the tubers are stimulant, tonic and diuretic, antipyretic, anthelmintic, and also used as antiviral, anti-inflammatory, and analgesic. Additionally, for human. The whole plant of *Sagittaria sagittifolia* L. is antiscarbutic, Diuretic, Laxative, Galactofuge, Tonic and the leaf is used as antiseptic. Essential oil of leaf of *S. sagittifolia* L. is used for Skin diseases in Chinese traditional medicine. In Vietnam the plant is used to treat dizziness or to apply on pimples (1, 7).

FOOD AND NUTRITIONAL

Sagittaria sagittifolia L. has a variety of potential purposes containing antioxidants like, vitamin E, carotenes, polyphenols, and many other compounds reduce the diseases. Leaves, stems and tubers containing protein, vitamins (B and E), and some mineral like iron calcium and potassium. *Sagittaria* herb is considered as one of the important herb with reference to nutritional security of rural communities; therefore *Sagittaria* to improve human health used and assist in combating malnutrition especially for developing countries. Fresh or dried leaves and tubers of *Sagittaria sagittifolia* Linn. are used in different kinds of foods. The tubers are cooked and used as a vegetable. The tubers are either used as boiled or roasted or can be dried and ground in to flour and making bread. Young stem are used as vegetable. The starchy tubers are good source of nutrition with Protein, Carbohydrate, Vitamins and flavonoids.

MEDICINE

Leaf paste is externally applied in different type of skin diseases. Roots are used in treatment of leucorrhoea.

II. CONCLUSIONS

The result of our study shows that *Sagittaria sagittifolia* L. is an indigenous plant North Eastern Terai region of U.P., which produces huge biomass. The edible part of this plant is starchy tuber,

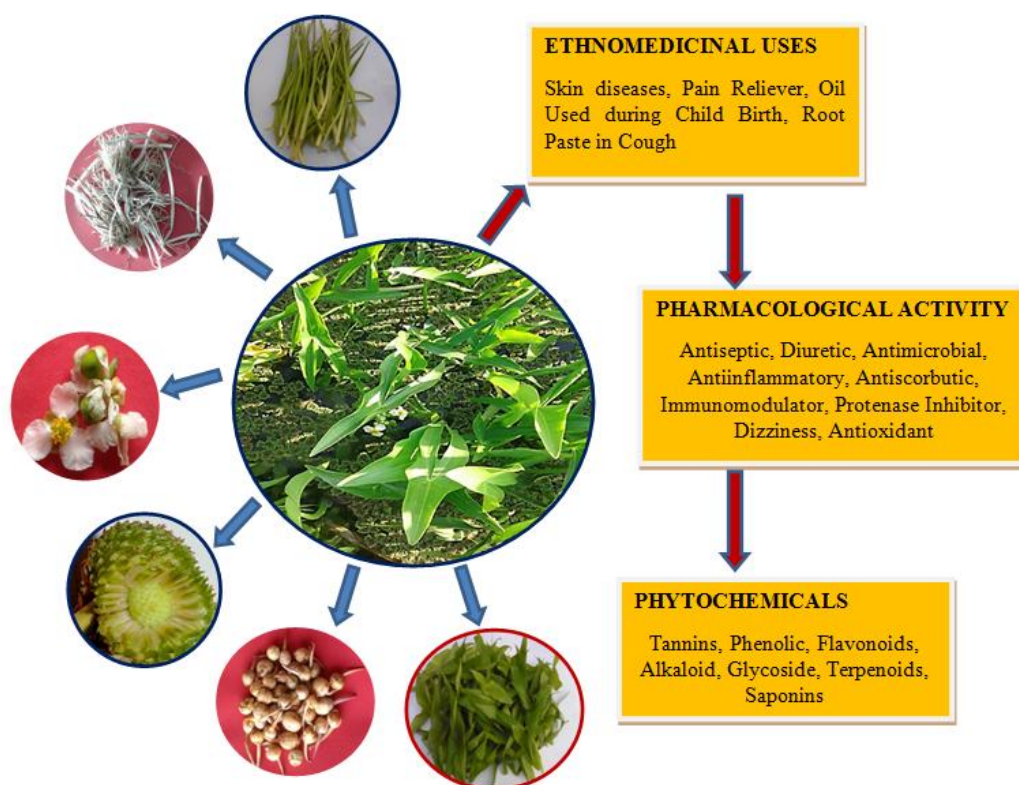


Fig. 1: Bioprospection of *Sagittaria sagittifolia* L.

leaf and stem. It contains large number of health promoting chemical substance and phytonutrients which are essential for human nutrition and therapeutic purposes. It is concluded that the isolation of important bioactive compounds of this plant should be done and to be used for further studies and exploration for its polyvalent utilization including medicinal as well as industrial value.

ACKNOWLEDGMENTS

The authors are thankful to the Head, Department of Botany, DDU Gorakhpur University, Gorakhpur, for providing all necessary facilities to carry out the experiments and laboratory facility. The Senior author, **Anita Rao** is thankful to University Grant Commission for providing financial assistance.

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