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Review Article

A Ethnomedicinal Review on Arisaema tortuosum

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ABSTRACT

Plants are a great source of medicines, especially in traditional medicine, which are useful in the treatment of various diseases. Medicinal herbs are moving from fringe to mainstream use with a great number of people seeking remedies and health approaches free from side effects caused by synthetic chemicals. Arisaema tortuosum is an ancient plant and had been used by the various tribes for various purposes in their daily life like food article and for treating diseases. The review summarizes ethno medicinal uses and other available data on this medicinal plant to explore its utility.

Keywords: Arisaema tortuosum, ethnomedicinal uses, pharmacology, chemistry, toxicity.

INTRODUCTION

Herbal medicine has such an extraordinary influence that numerous alternative medicine therapies treat their patients with Herbal remedies, Unani and Ayurveda. Approximately 25 percent of all prescription drugs are derived from trees, shrubs or herbs. Nature has bestowed our country with an enormous wealth of medicinal plants therefore India has often been referred to as the medicinal garden of the world. Arisaema tortuosum (air-uh-SEE-muh -- refers to the plant's resemblance to the Arum family and haima (blood); tor-tew-OH-sum -- meaning, twisted). This is commonly called whipcord cobra lily and by many other names in the Indian subcontinent (Chinese: qu xu nan xing • Hindi: kiri ki kukri, samp ki kumbh, Bagh Jandhra • Kannada: haavu mari gida • Konkani: sarpache kamdo • Marathi: sapkanda • Nepalese: bir bango • Tamil: katu cenai) The names comes from its cobra like appearance, with a whip-like tongue, upto 12" long, rising up vertically. Native to open Rhododendron forests, scrub and alpine meadows in the Himalaya from India to western China. The thick 4' tall fleshy petiole (stalk) emerges in early June, adorned by two tropical looking palmate green leaves near the top. As the leaves unfurl, the pitcher that tops the stem opens to reveal a green Jack-in-the-pulpit flower, but with a whip-like tongue that extends from the mouth of the flower upwards to 12 or more inches. In autumn, bright red berries ripen on the tall stem of those plants that have set seed. This wonderful plant for the woodland garden starts out about 50 cm tall, but it can eventually attain 2 m and form large clumps. It is highly variable, as one might expect. Sometimes the spadix-appendage is green, other times it is purple. The flowers are dioecious, individual flowers are either male or female, but only one sex is to be found on any one plant.[1] It is a wild plant used as food material and in ethano-medico practice by tribals. The aim of the present study is to provide complete information about the medicinal & pharmacological importance of the Arisaema tortuosum available till date.

Synonym[2]

- *Arisaema commutatum* Schott
- *Arisaema curvatum* (Roxb.) Kunth
- *Arisaema filiforme* Thwaites
- *Arisaema helleborifolium* Schott
- *Arisaema neglectum* Schott

- *Arisaema sivadasanii* Yadav, Patil & Janarthanam
- *Arisaema steudelii* Schott
- *Arisaema tortuosum* var. *curvatum* (Roxb.) Engl.
- *Arisaema tortuosum* var. *helleborifolium* (Schott) Engl.
- *Arisaema tortuosum* var. *Neglectum* (Schott) Fisch.
- *Arisaema tortuosum* var. *steudelii* (Schott) Engl.
- *Arisaema wightii* Hook.f.
- *Arum curvatum* Roxb.
- *Arum tortuosum* Wall.

Classification[3]
Arisaema tortuosum (Wall.) Schott
Kingdom *Plantae* – Plants
Subkingdom *Tracheobionta* – Vascular plants
Superdivision *Spermatophyta* – Seed plants
Division *Magnoliophyta* – Flowering plants
Class *Liliopsida* – Monocotyledons
Subclass *Arecidae*
Order *Arales*
Family *Araceae* – Arum family
Genus *Arisaema* Mart. – Jack in the pulpit
Species *Arisaema tortuosum* (Wall.) Schott – arisaema

Natural habitat
It is probably the most common species of Arisaema from our part of the world. In its natural habitat it is found growing in a wide range of climatic zones ranging from the warm foothills right up to cold, winter frost areas. It inhabits lightly shaded woods and also sunny hill slopes growing along with other shrubs and grasses. Found in Forests, shrubberies and open slopes to 3000 metres[4]. Moist shady places at elevations of 1500 - 2200 metres in Nepal[5]. It ranges entire sub-himalayan belt of Northern India and to Northeast India and China

Cultivation
It prefers a cool peaty soil in the bog garden, woodland garden or a sheltered border in semi-shade[6, 7]. Prefers a loamy or peaty soil and will tolerate a sunny position if the soil is moist but not water-logged and the position is not too hot or exposed [8, 7]. Plants are not very hardy outdoors in Britain and are normally best if given protection[8]. However, they can succeed outdoors in the milder areas of the country if the tubers are planted about 20cm deep[7]. Plants require protection from slugs[7]. Most species in this genus are dioecious, but they are sometimes monoecious and can also change sex from year to year. This species usually bears either monoecious or all male flowers[9].

Propagation Methods
By dividing rhizomes, tubers, corms or bulbs (including offsets)
From seed; winter sow in vented containers, cold frame or unheated greenhouse
From seed; sow indoors before last frost
From seed; germinate in a damp paper towel
Seed - best sown as soon as it is ripe in a shady position in a cold frame. Stored seed remains viable for at least a year and can be sown in spring in the greenhouse but it will probably require a period of cold stratification. Germination usually takes place in 1 - 6 months at 15°c. When large enough to handle, prick the seedlings out into individual pots and grow them on in light shade in the greenhouse for at least a coupe of years until the corms are more than 20mm in diameter. Plant out into their permanent positions whilst they are dormant. Division of tubers when the plant dies down in late summer[6].

Ethanomedicinal uses
Ethanomedico practice by the indigenous people of Kumaun Himalaya region of Uttarakhand, India[10]
(Plant part-Herb/ Whole herb)
Herb used to cure various ailments related to digestive tract like constipation, indigestion, abdominal pain and dysentery. It showed anti-nematodal activities and also used treat bone fracture.

Ethanomedico practice by the newar community of pharping village of Kathmandu District, Nepal[11]
(Plant part-Rhizome)
Rhizome in raw/liquid form used as anthelmintic.

Ethanomedico practice by peoples of Paderu division of Visakhapatnam district, A.P, India[12]
(Plant part-Root)
Root is used for boils and dysentery

Ethanomedico practice by peoples from Tribal Area of Rajasthan (India)[13]
(Plant part-Tuber)
Paste of the tuber in applied over the wound caused by snake – bite to check poisonous effect.
In case of abscess in the neck, dried powder of tuber is applied over the neck. It helps in early healing.
The decoction of tuber is given to animals for early recovery of fractured bone.
Also act as antinematodal
Ethanomedico practice by peoples from Bhilla tribe of Maharastra[14]
(Plant part-Tuber)
For hair follicle infection tuber paste is applied twice a day till relief

Ethanomedico practice by peoples from Karbi tribe of Karbi Anglong district Assam[15]
(Plant part-Tuber and Fruit)
For piles 50 gm tuber boiled and taken with rice, twice daily for a month.
Roasted fruit and boiled tuber with salt is used as vegetable.

Ethanomedico practice by peoples from South Waziristan, Pakistan[16]
(Plant part-Leaves)
Ten gm leaves are fried in 100 gm of animal ghee (Asli ghee, or butter) a preparation called Dardama. A teaspoonful of this recipe is taken at lunch and dinner to treat rheumatism and stomachache.

Ethanomedico practice by peoples from Malayali tribals of Kollihills of Tamilnadu India[17]
(Plant part-Corm)
Corm boiled with tamarind taken internally to cure piles

Ethanomedico practice among the Bhotiya Tribal Communities of Niti Valley in Central Himalaya, India[18]
(Plant part-Fruit)
Fruit paste is prepared for application for piles .1gm four times a day for seven days

Ethanomedico practice among the Tribals of Sitamata wildlife sanctuary of Chittorgarh and Udaipur, Rajasthan[19]
(Plant part-Tuber)
Extract of half tuber is taken orally by the tribals as antidote in dog bite.
Powder of one tuber is divided in three parts and each part is taken orally daily for three days to cure liver complaints and stomachache

Ethanomedico practice among the Tribals of Orissa State, India[20]
(Plant part-Tuber)
Tuber used in preparation of massage oil for Rheumatism

Ethanomedico practice by Traditional *Vaidyas* in Alaknanda Catchment of Uttarakhand, India[21]
(Plant part-Fruit)
Fruit is used for the treatment of Piles

Ethnomedicinal practice among rural women of the Garhwal Himalaya, Uttaranchal[22]
(Plant part-Tuber)
Tuber paste is applied in rheumatism. Dry tuber is used for breathing problems

Ethnomedicinal practice in the Shola understories of Nilgiris, the Western Ghats, Tamilnadu, India[23]
(Plant part-Tuber, spadix)
Paste of tuber and spadix used as antidote, veterinary purposes and contraceptive.

Chemistry
The tubers contains n-alkanes, n-alkanols, stigmasterols, sitosterols, campesterol, cholesterol, choline chloride, staychydrine hydrochloride[24]

Known Pharmacology
Anticancerous activity
Arisaema tortuosum lectin was found to inhibit in vitro proliferation of human cancer cell lines HT29, SiHa and OVCAR-5[25]

Toxicity
The plant contains calcium oxalate crystals. These cause an extremely unpleasant sensation similar to needles being stuck into the mouth and tongue if they are eaten but they are easily neutralized by thoroughly drying or cooking the plant or by steeping it in water[26]
Leaf is reported to be moderately poisonous. Its ingestion may cause vomiting in animal[27]

CONCLUSION
This plant grow as a weed in rainy season and people cut it down but by the help of its worldwide ethanomedicinal information this plant have good future prospective for exploration of its pharmacological activity for treating various diseases. As the global scenario is now changing towards the use of plant product having traditional medicine use, development of modern drug from *Arisaema tortuosum* should be emphasized for the control of various diseases.

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