

RESEARCH ARTICLE

Notes and ethnic importance on the purplestem taro (*Xanthosoma violaceum* Schott- araceae)

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Abstract: *Xanthosoma violaceum* Schott (Araceae) is one of the six most important tuber crops in the world and essential food for millions of indigenous people and also planted as an ornamental aroid. It has plenty of micro elements, vitamins, antioxidants, and fibre besides carbohydrates and proteins. The present paper is dealing with the detailed description, ethnic importance and taxonomic notes.

Key words: Andhra Pradesh, Araceae, Eastern Ghats, Edible, Tribes, *Xanthosoma*

Introduction

“Our Food should be our Medicine and Our Medicine should be our Food” (Hippocrates). “God said, I give every green plant for food” (Genesis 1-29 and 30). Unfortunately, we selected some tasty foods and neglected medicinal ones. “The drug is always bitter”, so are the medicinal foods. Everybody likes Potatoes and Sweet potatoes, but no one likes Yams and Aroids. Because Yams and Aroids are considered as poor people’s food, loathed and they are not tasty. Many aroid species are having calcium oxalate crystals, which make irritation in mouth. Due to these reasons people are neglecting important wild edible tubers.

Some unknown edible tuberous plants such as *Dioscorea* spp., *Amorphophallus* spp., *Alocasia* spp., *Colocasia* spp., *Xanthosoma* spp. etc. are growing in our surroundings, especially in hilly terrain and remote forest floors, which are energy reservoirs of nature, highly nutritive and medicinally important. Among these, aroids are one of the major staple foods. Edible corms of aroids viz., *Colocasia esculenta* (Taro), *Xanthosoma*

sagittifolium (Tannia) *X. violaceum* (Blue taro) constitutes one of the six most important root and tuber crops world and essential food for millions of people (Jennings 1987, Sarma *et al.* 2016).

While exploring the aroids of Andhra Pradesh, a population of *Xanthosoma* was observed and collected a few specimens were by the first author in the Visakha agency/hilly region of Eastern Ghats. Later, the specimens were identified as *Xanthosoma violaceum* Schott by using recent revision of Croat *et al.* 2017, Goncalves 2011). The species is naturalised along the hills/Ghats of the Eastern Ghats. The present paper is dealing with taxonomy, ethnic importance and notes on the edible aroid *Xanthosoma violaceum*.

The genus *Xanthosoma* Schott (Araceae) is represented by about 196 species (POWO 2022), mainly distributed in tropical and southern tropical America, Cost Rica and West Indies and introduced and naturalised in many tropical regions of the world (Mayo 1997). The leaves and root stocks of the genus are important food source in many countries. In India, the genus is represented by two species *X. sagittifolium* (L.) Schott and *X. robustum*. *Xanthosoma sagittifolium* (L.) Schott is naturalised in low land areas of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu and also cultivated for its edible tubers (Prameela, Swamy and Prakasa Rao 2020). *Xanthosoma robustum* Schott is a marshy

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shrub and growing near streams and water bodies in Vizianagaram district of Andhra Pradesh (Prameela & Swamy 2021).

Key to *Xanthosoma* species of India.

1a. Wild species growing in natural environment near aquatic regions; spadix with sterile portion yellow.....*X.robustum*

1b. Cultivated species for food or as ornamental plants; spadix with sterile portion white or pink2

2a. Posterior rib not at all naked; Posterior lobes rounded at the tip; petiole, mid rib and lateral ribs are green; peduncle 25 cm long; spadix with sterile portion white. Latex white..... *X. Sagittifolium*

2b. Posterior rib naked at least 1 cm; Posterior lobes pointed at the tip; petiole, mid rib and lateral ribs are dark purple; peduncle 45 cm long; spadix with sterile portion pink. Latex pink.....*X.violaceum*

Taxonomic treatment

Xanthosoma violaceum Schott in Oesterr. Bot. Wochenbl. 3 (47): 370. 1853.

Perennial shrub, mesophytic, 100-150 cm high; stems hypogaeous in younger plants, epigeous in mature plants; epigeal stem erect or decumbent, brown; all aerial parts contains latex, it is pink in colour. Leaves and petioles tinged with violet; leaves 4-6; petioles 100-130 cm long, glaucous, sheathing petiole 60- 80 cm long, sheath margins convolute, 4-5 cm deep, reddish; leaf lamina 60-100 cm long, sagittate to sub hastate, apex apiculate. Inflorescence 4-6 per axil; peduncle 40-45 × 3-4 cm, violet green, furrowed at one side, bracts pinkish; spathe 24 - 30 cm long; tube ovoid, 7-8 × 2-3 cm, violet outside, reddish inside; limb 15-16 × 7-8 cm, yellowish green, margin tinged with purple pink; spadix 20- 25 cm long; stipe 0.3 cm long in young spadices, spadix is surrounded by pink membrane; staminate portion 10- 12 cm long, 1-1.2 cm wide at base, 0.4 cm at apex, creamy pink; neuter portion 5-6 cm long, dark pink, dimorphic in three rows, lower 2-3 rows neuters, round, dark pink, 1 cm wide; middle 8 – 9 rows elongated, dark pink, 0.5-0.8 cm wide; upper 2 rows smaller, pale pink; pistillate portion conoid, 3.5- 4.3 × ca. 1.5 cm, penta-carpellary, 5-locular, axile placentation, many ovuled, funicle long; stigma brown, sunken.

Flowering and Fruiting: June- October.

Habitat: Mesophytic; naturalised in the hill region of Eastern Ghats and cultivated along with *Colocasia esculenta* and *Curcuma longa* and also planted as an ornamental in plain areas.

Distribution: Central America, Greater Antilles, South America and introduced elsewhere

Specimen examined: India, Eastern Ghats, Andhra Pradesh, Visakhapatnam, Araku, date:11-09-2021 R. Prameela 23390 A.U (B.D.H).

Notes: *Xanthosoma violaceum* is very allied to *X. sagittifolium* by its habitat and habit but former species is easily recognised by its pure violet parts (petioles with purplish sheath margins, major nerves, peduncles, etc.) that stay violet even after the wax is scratched from its surface, where as in later species aerial parts are green. In former species spadix with sterile is portion pink and posterior rib of leaf blade not at all naked or nearly so and lobes rounded at apex, in later species spadix with sterile portion is white or yellow; posterior rib of leaf blade striped at least 1 cm and lobes pointed at apex (Croat, Delannay and Ortiz 2017, Goncalves 2011).

Ethnic importance

In East Godavari, Visakhapatnam and Vizianagaram districts of Andhra Pradesh, Bhagatha, Kondadora, Khond, Kondakapu, Valmiki, Kammara, Gadaba, Kotias, Porja and Nookadora are the major tribes of in the agency area. Except the tribes Bhagata and Valmiki, remaining are belonging to primitive group of tribes. Since the time immemorial, the ethnic groups of the area have been using these wild tubers as vegetable during scarcity of food. Wild aroids have been using as vegetable including species of *Xanthosoma* for their regular diet. In plain areas people are raising the species of *Xanthosoma* as an ornamental.

Now it's time to dig our traditional knowledge; knocking and knowing of our traditional knowledge is a big attempt. *Xanthosoma violaceum* is not only used in the Eastern Ghats but also in some parts of the country and in some parts of the world. In the Eastern Ghats, tubers of the plant are boiled and eaten with salt and pepper.

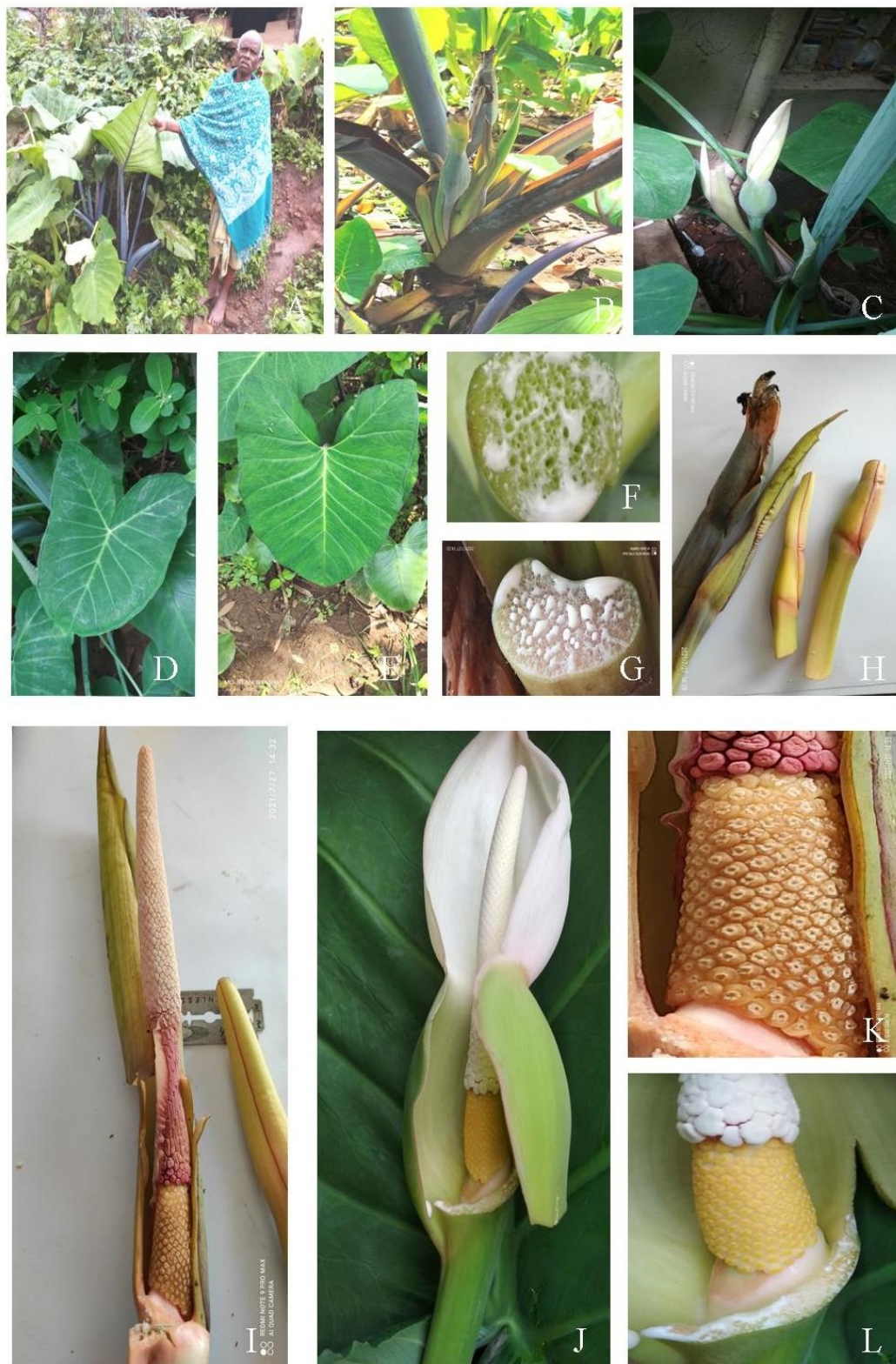


Figure 1(A-L): *Xanthosoma violaceum* A. Habitat; B. Habit, Plant with inflorescence; E. Leaf, G. T.S of peduncle H. Inflorescence I. Spadix K. Female & neuter part *Xanthosoma sagittifolium* C. Habit, Plant with inflorescence D. Leaf F. T.S of peduncle J. Spadix L. Female & neuter part

Don't avoid this edible aroid, because this plant is rich in carbohydrates and proteins and also has plenty of micro elements, vitamins, antioxidants, fibre, alkaloids, glycosides, saponins, essential oils, resins and several sugars (Heindel 2012) In Assam this plant is used as a vegetable known as Krishna Kochu (Sarma *et al.* 2016). In the Northern Philippines, Purple tannia is one of the important food crop (Gayao *et al.* 2018)

The only problem with this tuber is itchiness due to minute, needle-like crystals of calcium oxalate scattered found in all parts of the plant, including roots, tubers, rhizomes, stems, leaves and fruits. This problem can be solved by 'boiling the tubers in water and then drain the water. Tubers should be cooked only after draining the boiled water'. In Araku areas these tubers are roasted and eaten. Leaves are eaten by cattle.

Conclusion

The important *Xanthosoma violaceum* is naturalised in hill regions and also have been propagated by indigenous people as a vegetable and animal feed since time immemorial. Like other *Xanthosomas* no research has been done on this species. It has many uses besides suitable for eating. Further research needs to be done in India on this plant.

References

- Croat B T, Delannay X and Ortiz O O 2017 A revision of *Xanthosoma* (Araceae). Part 2: Central America. *Aroideana* **40** (2) 504-581.
- Gayao B T, Meldoz D T and Backian G S 2018 in Niehof et al.(eds) , *Diversity and change in food wellbeing-cases from Southeast Asia and Nepal*. Wageningen Academic Publishers. 43-69.
- Heindel T 2012 *The Mystery of Malanga: Possible roles of Xanthosoma violaceum in Ancient Maya diet, culture, and agriculture*. Thesis submitted to University of Colorado.
- Jennings D L 1987 in Christie, B. R (ed.) Starch crops In: *CRC Handbook of Plant Science in Agriculture*. Volume II. CRC Press, Inc. Boca Raton, Florida, USA, 137-143
- Mayo S J, Bobner J and Boyce P C 1997 *The Genera of Araceae*. Royal Botanic Gardens, Kew. p. 209
- POWO 2022 *Plants of the World Online* <http://www.plantsoftheworldonline.org/>Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet. [Accessed on 12th January 2022].
- Prameela R, Swamy J and Prakasa R J 2020 Notes on the Distribution of *Xanthosoma sagittifolium* (L.) Schott (Araceae) in Peninsular India. *J. Indian bot. Soc.* **100** (1 & 2) 87-90.
- Prameela R and Swamy J 2021 *Xanthosoma robustum* (Araceae): An addition to the flora of India. *Indian Journal of Forestry* **44**(2), pp 62-64, 2021.
- Sarma A, Burhagohain R, Barman R P, Dey S K, Phukan R, Sarmah P and Medhi P 2016 Variability in nutritional content of some underutilized edible aroids found in hilly terrain of Assam state of India. *World Journal of Pharmacy and Pharmaceutical Sciences* **5** (2) 1398-1410.

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