

Alocasia macrorrhiza: A Decorative but Dangerous Plant

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Abstract

Alocasia macrorrhiza also known as giant taro, elephant's ear is a member of Araceae family. It is commonly used as a decorative plant. It is also used in many parts of the world as traditional herbal medicine in diverse ailments. The plant is toxic to animals and the principal toxic ingredient is insoluble calcium oxalate. Few cases of human toxicity have been reported worldwide. We report this case of plant poisoning after ingestion of leaves of *A. macrorrhiza* in 1½-year-old male child and his father to sensitize medical fraternity regarding the toxicity of this household decorative plant.

Key words: *Alocasia macrorrhiza*, Decorative plant, Poisoning

INTRODUCTION

Alocasia macrorrhiza is commonly used as a household decorative plant. It is a tall succulent herbaceous plant that can reach up to 4.5 m. It has a large elongated stem, around 0.9 m long and arrow-shaped leaves with shallow and rounded lobes. The leaves point upward forming a straight line with the main axis of the petiole.

They have a conspicuous midrib and are green in color. The leaves are nearly peltate. The caudex is well developed.¹ Most commonly used part of the plant is tuber having chemical constituents of alomacrorrhiza A and allocasin. The detoxified tuber is used to treat influenza, high fever and malaria; diarrhea and typhoid fever, rheumatic; pulmonary tuberculosis and tuberculous lymphadenopathy; headache; abscesses and ring worms; venomous bite of snake, dogs and insects, leukorrhea.¹ In Hawaii, it is used in the treatment of severe burns and acute abdominal pain.¹

The rootstock is used as mild laxative, diuretic; used in inflammation and diseases of the abdomen and skin.¹ It has been tried in the treatment of scorpion sting among the Indian traditional practitioners.¹

The leaves have been used as an astringent and anti-tumor medication. Root and leaf are used as a rubefacient. A local application of leaves in different forms is used for the treatment of skin conditions such as itching and burns, varicose veins, wound healing and rheumatic pains.¹

The underground stem of the plant is used as a household remedy for gout and rheumatism.¹

Pharmacology

The principal toxic ingredient is insoluble calcium oxalate.² The edible parts of this plant exhibit potent antioxidant properties especially the diethyl ether extract from all parts and the hydroalcoholic extract from the leaves.^{3,4}

The ethanolic extract of leaves also has anti-nociceptive, anti-inflammatory and hepato-protective properties.⁴

Allocasin isolated from the tuber of *A. macrorrhiza* has antifungal, weak hemagglutinating activity and reduces the activity of human immunodeficiency virus 1 reverse transcriptase enzyme.⁵

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Sapotoxin is a neurotoxin which leads to neurological symptoms (severe pain and numbness in the perioral area and throat).⁶

CASE REPORT

A 1½-year-old male child was brought by a grandfather with complaints of excessive cry, irritability immediately after eating leaves of a household plant known locally as Arbi/Hathikan (Figure 1). He developed redness of buccal mucosa and tongue after 2-3 min of eating leaves and excessive drooling of secretion from the mouth after half an hour. Out of curiosity, father also tasted leaves of the plant following which inflamed painful blister on the tip of the tongue and perioral numbness developed immediately. It was not relieved by home remedies (sweetened fluids) and lasted for 8-10 h. On examination at the time of admission (after 1 h of eating leaves), child was very irritable with an inconsolable cry and had salivary drooling. Lips and tongue were swollen and reddened. He had dysphagia. On 2nd day, leaves and tuber were brought by parents, which after consultation with botany department, were from a decorative home plant called *A. macrorrhiza*. Patient was put on intravenous fluids, ranitidine, antacids, local antiseptic and anesthetic mouth gel. Healing occurred by 3rd day and patient was discharged. He was asymptomatic on follow-up after 1 week.

DISCUSSION

A. macrorrhiza is a very commonly used decorative plant in India without knowing that the ingestion of any part of the plant is toxic.⁷ Children can unknowingly come in contact to these plants and ingest some part of it leading to toxicity. In our study, the child developed excessive cry, irritability, redness of buccal mucosa and tongue, drooling of secretion from mouth, which was similar to a case reported by Chan and Chan, who reported a case of poisoning due to consumption of tuber of *A. macrorrhiza*. However, our case had ingested leaves of the plant instead of tuber.⁸

Goonasekera *et al.* had reported 2 cases of fatal poisoning following the ingestion of the fruit of *A. macrorrhiza*. The clinical manifestations simulated those of cyanogenic glycoside poisoning.⁷

A systemic review of cases reported of poisoning due to *A. macrorrhiza* attributed the symptoms to calcium oxalate crystals and sapotoxin. The reviewer noted that among 27 cases, 1 had eye contact another one had skin contact and rest all poisonings were due to ingestion of either leaf

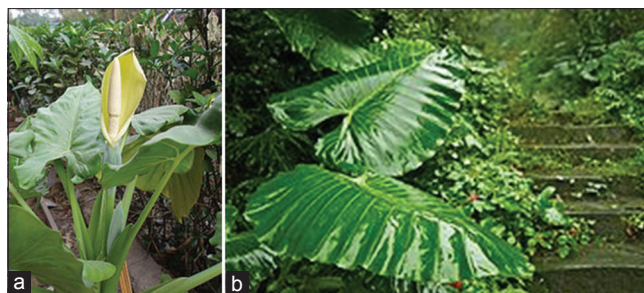


Figure 1: (a and b) *Alocasia macrorrhiza*^{10,11}

or tuber, raw or cooked. Sore throat with numbness of oral cavity, salivation, dysphonia, abdominal pain, airway obstruction, hoarseness, and ulcers of the oral cavity, dysphagia, thoracodynia, chest tightness and swollen lips were the commonly reported symptoms.⁹ There is no danger of systemic oxalate poisoning as the calcium oxalate is insoluble.⁶

The illness is self-limiting in most cases and requires only supportive treatment, however; throat pain, abdominal pain, excessive salivation and dysphagia do interfere with the daily activity and can be very stressful especially to small children.

CONCLUSION

We recommend that people should be educated about these problems so as to prevent further poisonings and decrease use of this plant for decorative household purposes.

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