

Case Report

An Unusual Case of Poisoning by *Jatropha curcas*: A Case Summary

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ABSTRACT

Purging nut (*Jatropha curcas*) is a perennial shrub belonging to the family Euphorbiaceae. This plant is used in traditional folk medicine and in Homeopathy for many ailments. Despite its purported medicinal properties, the whole plant is toxic and the toxicity is mainly due to the presence of toxalbumins curcin, ricin and cyanic acid. The fruit of the plant is attractive and resembles cashew fruit. The kernel of the seed is palatable and tastes like almond but is highly toxic. Because of these reasons accidental *Jatropha curcas* poisoning is not uncommon in children. An accidental poisoning in a two-year old child is briefly reviewed here.

Key Words: Poisoning; *Jatropha curcas*; Purging nut

INTRODUCTION

Plant poisoning is normally a problem of young children who unintentionally ingest small quantities of toxic plant parts which results in morbidity and a few deaths. In tropical regions of the world, including our country, plant poisonings are important clinical problems causing much morbidity and mortality. *Jatropha curcas* is one such poisonous plant, which is a perennial shrub belonging to Euphorbiaceae family. It is an uncultivated non-food wild species. The whole plant is poisonous. This poisonous property is mainly due to presence of toxalbumins curcin, ricin and cyanic acid.^{1,2} Poisoning with this plant is usually accidental, and mainly occurs in children. Not many cases have been reported in our country.

The importance of this case report lies in identifying the type of poison in a case of suspected plant poisoning

with gastrointestinal signs and symptoms, and also to make medical practitioners and health educators aware of the potential dangers of *Jatropha curcas* poisoning, and thus to minimize the accidental paediatric poisoning emergencies in the community.

The Case: A two year-old boy was brought to emergency department with drowsiness and two episodes of vomiting. On detailed history, it was learnt that he had consumed two seeds of a green coloured fruit of a plant near his house. The name of the fruit was given in the local language as “Kammattikkaya,” which actually refers to the fruit of *Jatropha curcas*. The fruits, seeds and the twigs of the said plant were brought by the relatives for confirmation of identity.

On bedside examination, the boy was drowsy, afebrile, pulse was regular with a rate of 114 per minute, respiratory rate 40 per minute, and blood pressure was 80/50 mm of Hg. Pupils were symmetrical and reacting to light. SpO₂ was 100% in room air. Systemic examination was essentially normal.

Routine biochemical investigations revealed the following findings:

Haemoglobin	- 10.2
WBC	- 15200 (N-80, L-15, M-4, B-1)
ESR	- 15
Platelet	- 315000
Blood Urea	- 32 mg/dl
S.Creatinine	- 0.3 mg/dl
SGPT	- 27 IU
Random Blood Sugar	- 108 mg/dl

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The boy was given stomach wash and bowel wash at the time of admission, which was continued sixth hourly. He had three episodes of vomiting on the day of admission and remained drowsy. On the second day, he showed signs of improvement. Stomach wash and bowel wash were continued on the second day also which was clear. The patient remained symptom-free on the following days and was discharged on the fourth day. At the time of discharge, his pulse rate was regular and 82 per minute.

DISCUSSION

Jatropha curcas is a perennial, poisonous shrub belonging to Euphorbiaceae family. This plant is used as a living fence to protect gardens and fields from animals and also naturalized as an ornamental plant. The roots, leaves, seeds and fruits of the plant have been used in traditional folk medicine, and in Homeopathy it is used for many ailments.² Even though the plant is used in many ways as stated above, the whole plant is toxic. Leaves, bark, root and fruits have been reported to contain cyanic acid. The black seed is called “physic nut” or “purging nut” since it is a strong purgative, and contains ricin, curcin (both toxalbumins), and tannic acid.^{2,3} The toxalbumen remains in the cake even after the extraction of oil.² The extracted oil is a purgative. Latex from the plant is also toxic, which is rich in tannin.

Of late, *Jatropha* seed oil is being tried as a biofuel.⁴ The Central Salt and Marine Chemicals Research Institute in India is aiming to cultivate *Jatropha* plant for the production of biodeisel.

The fruits of the plant are attractive and resemble cashew fruit. Kernel of the seed is palatable, and tastes like almond. Because of these reasons accidental *Jatropha curcas* poisoning is not uncommon in children.

Jatropha curcas poisoning is mostly accidental. Poisoning, especially ingestion of seeds, is characterized by burning in the throat, salivation, nausea, and acute abdominal pain. This is followed by, vomiting, diarrhoea, weakness, muscle twitching and circulatory collapse.^{3,5} Human deaths by this plant have not been reported so far, though animal deaths have been reported.² Four to five seeds are said to be enough to cause death.³ A systemic study by Abdu-Aguye et al⁶ has clearly demonstrated the toxic effects of seeds when the extract of the dried seeds was administered intraperitoneally into mice. Postmortem study in this case showed widespread haemorrhages involving colon, lungs, and infarction of liver.

Treatment is essentially symptomatic and supportive.^{1,3,5} Gastric lavage and cathartics may be useful in hastening elimination. There is no specific antidote. Specific therapy may be indicated for haemorrhagic gastrointestinal damage, gastrointestinal spasm, salivary secretion and haemoglobinuria. Correction of electrolyte imbalance is necessary. Renal function must be monitored, and urine alkalinized to minimize effects of haemoglobinuria.² If signs of central nervous system depression occur, assisted ventilation may be necessary.

CONCLUSION

In general, accidental paediatric poisoning must be recognized as a global health problem with significant opportunities for prevention. In suspected cases of accidental poisoning presenting with gastrointestinal symptoms, especially in children with history of consumption of unknown fruits or seeds, poisoning with *Jatropha curcas* should also be suspected. Even though most children who ingest *Jatropha curcas* seeds do not suffer much harm, health care providers must recognize, assess and manage those exposures which are likely to cause serious effects, and initiate appropriate management to minimize the consequences that could endanger the lives of such patients.

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