

# Case series of *Jatropha multifida* poisoning

Geeta Panicker<sup>1</sup>, Sony Thomas<sup>2\*</sup>, T P Antony<sup>3</sup>

{<sup>1</sup>Associate Professor, <sup>2</sup>Junior Resident, Department of Medicine} {<sup>3</sup>Professor, Department of General Medicine} Amala Institute of Medical Sciences, Thrissur, Kerala, INDIA.

Email: [sony.thomas090@gmail.com](mailto:sony.thomas090@gmail.com)

## Abstract

*Jatropha multifida*, from the family EUPHORBIACEAE is a flowering plant growing throughout the tropical and subtropical regions of the world particularly in India. *Jatropha* are fruit bearing and the seeds have pleasant taste, The plants are particularly attractive to children .studies have shown that children are most susceptible to *jatropha* poisoning when they ingest the seeds of the plant. Presented here is an unfortunate incident of mass poisoning where a group of 19 school children consumed *jatropha* seeds, mistaking them for eligible badham seeds. victims were hospitalized, promptly managed and recuperated successfully.

**Keywords:** *jatropha multifida*, poisoning.

## \*Address for Correspondence:

Dr. Sony Thomas, Junior Resident, Department of Medicine, Amala Institute of Medical Sciences, Thrissur, Kerala, INDIA.

Email: [sony.thomas090@gmail.com](mailto:sony.thomas090@gmail.com)

Received Date: 02/02/2019 Revised Date: 20/03/2019 Accepted Date: 11/05/2019

DOI: <https://doi.org/10.26611/102110217>

## Access this article online

Quick Response Code:



Website:

[www.medpulse.in](http://www.medpulse.in)

Accessed Date:  
21 May 2019

from it. this adds to global concern due to poisoning from it. most of the sporadic cases go undocumented as they remain neglected because symptoms due to poisoning are nonspecific and mainly gastrointestinal which mimics bacterial/protozoal gastroenteritis. This study reports a mass poisoning incident where victims mainly presented with gastrointestinal symptoms. the incident occurred on 15<sup>th</sup> January 2018, in a school in thrissur, where a group of 19 children consumed the toxic seeds of *jatropha multifida*, from the *jatropha* tree in the school playground@ around 1 pm. Most of the children developed symptoms, mainly vomiting, loose stools, abdominal cramps and lethargy 30 mts to 1 hour after ingestion. The first child, 14 year old boy came to casualty @ 4.30 pm and within next 2 hours the remaining 18 children came. all victims presented similar history of consuming unknown seed 30 minutes to 1 hour before the onset of symptoms. some victims brought the seeds with them whose samples and pictures were taken. based on the history, clinical features and identification of the seeds, the diagnosis of accidental poisoning due to *jatropha multifida* was made.

## INTRODUCTION

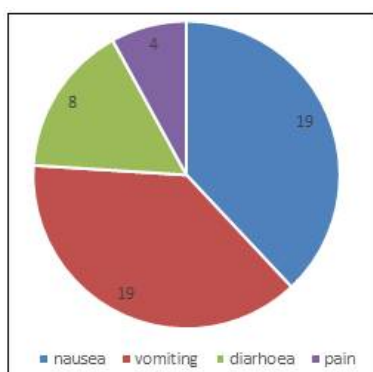
**Jatropha** is commonly known as physic nut which is derived from the greek word (iatros = physician, trophe = nutrition). it is an endogenous plant to parts of Asia south America and Africa .it possess antibacterial, anti-inflammatory and weak antioxidant activity. So it is used for the treatment of chronic wounds. At places it has been cultivated along hedges for ornamental purposes. Recently its large scale cultivation is being encouraged as many studies show huge scope for obtaining quality biodiesel

Clinical profile of the cases

	Age	N	ONSET	N	V	D	Pain abdomen
1	13	1	2hrs	+	5		
2	14	5	30 mts	+	4		+
3	13	1 ½	2	+	7		+
4	14	1	1	+	4		
5	14	1	1 ½	+	4	1	

6	15	1	1	+	3		
7	14	1	2	+	3	2	+
8	14	1	2 ½	+	5		
9	15	1	2	+	4		
10	14	1	3	+	6	1	
11	14	¼	1	+	5	1	
12	14	1 ½	2	+	3		
13	15	1	30 mts	+	5	4	
14	13	¾	2	+	1	2	
15	15	2 ½	1	+	6	2	
16	15	½	1	+	4		
17	14	5 ½	1	+	5		
18	14	2	1	+	3		
19	14	1/2	2	+	5	2	+

N: no : of seeds consumed onset: onset of symptoms N :nausea; V:vomiting D : no: of episodes of loose stools



Each victim consumed an average of 1-3 seeds .maximum no : of seeds ( 5 ½) was consumed by a 14 year old boy .but there was no correlation between the no of seeds consumed and the severity of clinical manifestations.

Out of the 19 children admitted nausea and vomiting was present in all the children. followed by diarrrhea which was present in 8 children, followed by abdominal pain which was present in 4.

### MANAGEMENT

All children were initially managed in emergency department, where vitals were checked. gastric lavage was not given as all the children presented after 4 hours of ingestion. Antiemetics and I/V fluids, activated charcoal were administered and all children were admitted in ICU, where serial monitoring of SBP, DBP, HR, urine output, signs of dehydration, recurrence of symptoms and relevant investigations including ECG, complete blood count, RFT, LFT, serum electrolytes were done.

Recurrence of symptoms	2
CBC	WNL
LFT	WNL
RFT	WNL
ECG	QT PROLONGATION :2
ELECTROLYTES	WNL
URINE OUTPUT	WNL

After 6 hours of ICU observation 17 children were shifted to ward and after 6 more hours of ICU observation all 17 were discharged. The 2 children with QT prolongation were retained in ICU for continuous monitoring. Repeat ECG was normal .so was discharged. All 19 children were followed up after 1 week.

### DISCUSSION



Jatropha multifida is a common plant found all over the world. belongs to the euphorbia family. The genus Jatropha contains approximately 170 known species. It is used for many medicinal purposes. Jatropha oil is used for many medical conditions like eczema, herpes, indolent ulcers and chronic rheumatic pain. Recently, the toxin (curcin) has been shown to have antitumor property. it has antibacterial,anti inflammatory and anti oxidant action. Jatropha seed oil is being tried as a biofuel. The Central Salt and Marine Chemicals Research Institute (CSMCRI), a Government-owned industrial research institute in India, is aiming to cultivate Jatropha plant for the production of biodiesel. Jatropha oil is an environmentally safe, cost-effective, renewable source of non-conventional energy and a substitute for diesel, kerosene and other fuel oils. The poisonous property of the plant is mainly due to presence of toxalbumin called curcin, ricin and cyanic acid, related to ricinoleic acid. Ricin has been shown to exhibit many

cardiotoxic and hemolytic effects. Though all parts of the plant are poisonous, seeds have the highest concentration of ricin and thus highly poisonous. The adverse effects following consumption of seeds include vomiting, diarrhea, abdominal pain and burning sensation in the throat. Within fifteen minutes of consumption vomiting and diarrhea set in. Acute abdominal pain is experienced about a half hour after the ingestion of the seeds. Although the available literature is scarce but all the *Jatropha* poisoning victims reported so far have been in the pediatric age group and all were presented with gastrointestinal manifestations. miosis is also a presenting sign of *Jatropha* intoxication. The combination of vomiting, diarrhea and miosis resembles the clinical presentation of organophosphate poisoning. This fact warrants the consideration of *Jatropha* ingestion in the differential diagnosis of organophosphate ingestion. In our study miosis was not documented in any child with acute *Jatropha* poisoning suggesting that miosis is not a consistent feature of acute *Jatropha* poisoning. Human deaths by this plant have not been reported so far though animal deaths can occur.

Treatment is essentially symptomatic and supportive. In all cases of ingestion or suspected ingestion, if possible induce emesis within 1-2 hours of ingestion or perform gastric lavage when ingestion is recent (within one hour) and activated charcoal be given for all cases where time of ingestion is < 4 hours and a cathartic to hasten elimination. Many patients may not be able to tolerate activated charcoal if they already have nausea and vomiting. There is no specific antidote for it. Specific therapy may be indicated for hemorrhagic gastrointestinal damage, skeletal muscle and gastrointestinal spasm, excessive salivary secretions and hemoglobinuria. After substantial exposures to toxalbumin containing plants, minimum observation period of up to 8 hours is advised. Give IV fluids and electrolyte as necessary to restore and maintain fluid and electrolyte balance. Monitor renal function and alkalinize urine to minimize effects of hemoglobinuria. Treat hemorrhagic gastro-intestinal damage as for peptic ulceration. Observe for signs of CNS depression and initiate assisted ventilation if necessary. Patient outcomes, both in our case series and in the reported literature, were favorable.

## CONCLUSION

With increase in the cultivation of *Jatropha* for its use as biofuel there is a chance for an increase in accidental poisoning cases. Though most children who ingested *Jatropha* seeds developed mild gastrointestinal symptoms but life threatening hypovolemic shock can occur. There is a general lack of awareness among medical professionals about its potential for serious toxicity. The main objective of this article is to make the practitioners and general population aware of the potential dangers of *Jatropha* seeds so as to minimize the accidental pediatric poisoning emergencies and financial burden on the community. Simultaneously school children should be taught in schools to avoid experimentation with unfamiliar plant substances.

## REFERENCES

1. Barceloux DG. Barbados nut (*Jatropha multifida* L.) Medical toxicology of natural substances: foods, fungi, medicinal herbs, plants and venomous animals. Hoboken, New Jersey: John Wiley and Sons Inc; 2008 Chapter 140; p.829-831.
2. Levin Y, Sherer Y, Bibi H, Schlesinger M, Hay E. Rare *Jatropha multifida* intoxication in two children. *J Emerg Med* 2000 Aug; 19(2):173-175.
3. Reddy KSN. The essentials of Forensic Medicine and Toxicology. 22nd ed. K. Suguna Devi; Hyderabad: 2003.
4. Parikh CK. Parikh's Text Book of Medical Jurisprudence and Toxicology. 6th ed. CBS Publishers; New Delhi: 1999.
5. Subramanyam BV. Modi's Textbook of Medical Jurisprudence and Toxicology. 22nd ed. Butterworths; New Delhi: 1999.
6. Singh S, Mehta RS. Environment - *Jatropha* biodiesel. *Autocar India*. 2005;7:169-175.
7. Levin Y, Sherer Y, Bibi H, Schlesinger M, Hay E. Rare *Jatropha multifida* intoxication in two children. *J Emerg Med* 2000;19:173-175.
8. Abdu-Aguye I, Sannusi A, Alafiya-Tayo RA, Bhusnumath SR. Acute toxicity studies with *Jatropha curcas* L. *Hum Toxicol*. 1986;5:269-274
9. Kulkarni ML, Sreekar H, Keshavamurthy KS, Shenoy N. *Jatropha curcas* poisoning. *Indian J Pediatr*. 2005;72:75-76.
10. Joubert PH, Brown JM, Hay IT, Sebata PD. Acute poisoning with *Jatropha curcas* (purging nut tree) in children. *S Afr Med J*. 1984;65:729-730.
11. Koltin D, Uziel Y, Schneidermann D, Kotzki S, Wolach B, Fainmesser P. A case of *Jatropha multifida* poisoning resembling organophosphate intoxication. *Clin Toxicol (Phila)* 2006;44:337-338.

Source of Support: None Declared  
Conflict of Interest: None Declared