

# Acute poisoning in children from *Jatropha curcas* seeds

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The semi-evergreen shrub, *Jatropha curcas* is native to Central and South America, but now occurs worldwide. Four children suffered severe symptoms of abdominal pain, nausea and vomiting after ingesting the seeds of *J. curcas*. These cases support the listing of *J. curcas* as a noxious weed. As a result of this, and a few other incidents, municipal authorities are urged to discourage the use of highly toxic plants such as *J. curcas* for hedges and garden plants, and to monitor the occurrence of such species. We present a case report about *J. curcas* poisoning.

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## Case report

Poisoning from plants is common in South Africa (SA).<sup>[1-5]</sup> Children are regularly exposed to toxic plants and usually poisoned when plants are mistaken for common, edible plants e.g., *Jatropha curcas* is often mistaken for nuts.<sup>[3-7]</sup> Similar cases have been reported in Thailand, India and Israel.<sup>[8-10]</sup> All of these studies show that children are more susceptible to *J. curcas* poisoning because of their highly curious nature, which often leads to ingestion of the seeds. There are fewer datasets on paediatric poisoning from developing countries than from developed countries, likely due to underreporting of cases and lack of proper data management systems.<sup>[11]</sup> This report deals with four cases of acute *J. curcas* poisoning in children in Limpopo Province, SA. The immature fruit is small, capsule-like, round and green and becomes dark brown as it matures (Fig. 1). Each fruit contains three black seeds resembling nuts, e.g. peanuts/cashew nuts, that have a sweet taste.<sup>[12]</sup>

Four children aged between 2 and 6 years were playing close to an abandoned yard where the plant grew. A fruit-bearing branch of *J. curcas* was hanging over the fence and the children collected the fruit and ate the seeds. Shortly after ingesting the fruit, they developed abdominal pain and were rushed to hospital. The lag time before the onset of gastrointestinal (GI) complications varied between 90 and 120 minutes. The GI symptoms that developed included abdominal pain, nausea, vomiting and diarrhoea, as well as a burning sensation in the throat. The patients were treated with intravenous hydration and anti emetic medication and the symptoms resolved within 12 - 14 hours. Three of the 4 children were observed for 24 hours and discharged the following day. The 2-year-old child was hospitalised for 7 days owing to prolonged diarrhoea. There is no specific antidote and the lethal dose in humans has not been established.<sup>[13]</sup>



Fig. 1. The fruit of the *Jatropha curcas* plant. (Photograph courtesy of Annah Ngobeni.)

## Discussion

*J. curcas* L is a member of the family *Euphorbiaceae* and also known as a physic nut, purging nut, Barbados nut and *purgeerboontjie*. It is native to Central and South America, but is now widely distributed in most African countries, India and South East Asia.<sup>[14]</sup> In SA, it is found mainly in the northern and eastern parts of the country, especially in Limpopo, Mpumalanga and KwaZulu-Natal provinces.<sup>[15]</sup> It is a drought-resistant perennial plant, widely used as hedges and traditional medicine for ailments such as malaria, oedemas, etc.<sup>[6]</sup> Research has also recently investigated its potential use in biodiesel production.<sup>[16,17]</sup>

Rural communities cultivate this plant as hedges around gardens and fields. Because of its unpalatability it is not grazed on by cattle.<sup>[3]</sup> *J. curcas* seeds contain a toxalbumin, curcin, which is 1 000 times less toxic than ricin found in *Jatropha multifida* seeds.<sup>[10]</sup> The GI effects (purgative activity) are caused by the diterpenoids and curcanoleic acid in the seed oil.<sup>[8]</sup> GI symptoms vary in severity and include abdominal pain, nausea, vomiting, diarrhoea and burning sensations in the throat.<sup>[8-10]</sup> Mastication of the seed may also play an important role in the extent of its toxicity.<sup>[18]</sup> The most effective treatment is symptomatic and supportive care. Most reported cases of *J. curcas* poisoning occurred in children, with toddlers being at higher risk of severe toxicity, although no fatalities have been reported in humans.<sup>[3,8-10]</sup> Despite the toxicity of the plant, it is cultivated for various uses, which includes its use as a biofuel.<sup>[16]</sup> The increased interest and cultivation of *J. curcas* will eventually increase the likelihood of accidental poisoning of children, particularly those in rural areas.<sup>[19-22]</sup>

## Conclusion

This case highlights the need to consider primary public awareness of the toxicity of *J. curcas*. Furthermore, children in areas where the plants occur should be prevented from ingesting the seeds and educated about the dangers of ingesting anything unauthorised by their parents. This case report supports the previous evidence suggesting that *J. curcas* should be considered a noxious weed. We urge municipal agencies to discourage the use of highly toxic plants as hedges or in gardening. In cases where legislation controls the use of this plant, more emphasis should be placed on monitoring and educating people about the dangers of *J. curcas*.<sup>[23]</sup> Therefore, increased monitoring and surveillance of *J. curcas* populations is recommended.

# CASE REPORT

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