

Jatropha Multifida Poisoning In A Malabari Goat

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Abstract: A rare case of *Jatropha multifida* poisoning in a adult Malabari goat is reported. Clinical signs were related to the gastrointestinal system with diarrhea and resultant dehydration. Perusal of literature did not reveal any report of *Jatropha multifida* poisoning in animals in India.

Keywords: Goat, *Jatropha multifida* poisoning

I. Introduction

Jatropha is a nonedible oil seed plant belonging to Euphorbiaceae family. The Spurge family (Euphorbiaceae) is a large family of flowering plants with 321 genera and around 7550 species [1]. The genus *Jatropha* is widespread in the tropical regions of the world such as Americas, Africa and parts of the Asian subcontinent. The major toxic principle in *Jatropha* seeds are phorbol esters [2]. *J. multifida* is a large shrub with distinctive large dark green leaves cut deeply into 7-11 narrow lobes, margins of each lobe being dissected into narrow pointed segments. The fruits are three lobed, 2.5 cm long, smooth and yellowish. [3]. Perusal of literature did not reveal any report of *Jatropha multifida* poisoning in animals in India.

II. Case Study

A three year old 30 kg Malabari doe was presented to University Veterinary Hospital Kokkalai, Thrissur, with the history of anorexia, weakness, diarrhoea and lethargy that had progressively worsened over the preceding two days. During history collection, it was revealed that the animal had consumed a particular plant, which the owner was not familiar with, from a new grazing area for the last two days. On examination, the animal was dull and depressed. Dehydration was evident on skin tenting examination along with moderately sunken eyeballs (Fig. 1). On clinical examination, the rectal temperature of the goat was 103.0°F and rumen motility was 2 per minute. Faecal sample was negative for ova of parasites. The owner was asked to bring the plant sample and he brought the same and informed that there were fruits also in these plants. The plant was identified with expert support as *Jatropha multifida* (Fig. 2). A tentative diagnosis of *J. multifida* toxicosis was made based on the history of grazing these plants and presence of characteristic gastrointestinal signs which have been reported [4]. The case was treated symptomatically with lactated Ringer's solution 300 ml followed by 5% dextrose 500 ml (slow intravenous) along with B complex injection (Inj. Bplex forte 1 ml intramuscularly). A single dose of activated charcoal (2 g/kg orally) was also given. Treatment was continued for three days and complete recovery was observed.

III. Discussion

It has been opined that history of consumption of plant and seed and positive identification of ingested plant as *Jatropha* is a must for diagnosing toxicity in ingested animals in case of *J. curcas* poisoning[5]. Phytotoxins are absorbed from the gastrointestinal tract in appreciable quantities to result in poisoning. The toxicity of *J. multifida* is attributed to its seeds. The seeds are known to contain two main toxins that could lead to clinical signs after ingestion. The first type includes a variety of diterpenoid esters, including the tiglane-type, such as citralitrone, curcusones, and riolozatrione [6]. These toxins have been shown by in vitro studies to have the potential to cause cardiac and respiratory depression. The second toxin type is known as toxalbumins, which are proteins known to inhibit protein synthesis, similar to the effects of ricin [7]. It has been reported that curcin and phorbol esters are the two main substances that have been associated with the toxicity of *Jatropha* species[8]. Phorbol esters are the most toxic molecules in *Jatropha* species. The clinical signs in the present study could be attributed to the effects of both these toxins. Acute toxicity in goat due to *Jatropha curcas* seeds were reported when given at a dose ranging between 0.25 to 10 g/kg/day[9]. During dosing period, symptoms like diarrhoea and loosing ability to keep normal posture were seen in the goat and mortality occurred between day 7 and 21 after extract administration. In a study conducted, sheep receiving pericarp of *Jatropha curcas* in 15 % concentration, after 10 days of pericarp ingestion produced decrease in food intake, diarrhoea, dehydration and loss of body condition[10]. Similar findings were reported in another study i.e. profused diarrhoea, rapid respiration and abdominal pain, salivation, moaning, anorexia, reduced water intake, ataxia and recumbency in *Jatropha* toxicity[11]. It was found that animals usually limit their intake of plants

containing toxins through feedback mechanisms that link the body with the palate [12]. Toxins exert adverse effects on the body that feedback via various nerves to the palate, which in turn enables animals to satiate/stop eating a particular food. This toxin satiation threshold is specific to various toxins or a combination of toxins and nutrients. In this case the animal might have stopped feeding of toxic plant based on above principle and supportive treatment hastened the recovery within three days. The possibility of poisoning with *Jatropha multifida* should be borne in mind while treating cases with signs suggestive of such poisoning when ruminants are presented from areas with *Jatropha multifida* in grazing areas.

IV. Figures



Fig.1 Goat suffering from marked depression, dehydration and weakness after ingestion of *Jatropha multifida*



Fig. 2. Leaves of *Jatropha multifida* with dried fruits brought by the farmer

V. Conclusion

A report of plant poisoning in a Malabari goat with *Jatropha multifida*, the clinical signs of importance and the treatment adopted is discussed. *Jatropha multifida* poisoning in ruminants in India has not been reported.

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