



P-ISSN: 2349-8528

E-ISSN: 2321-4902

IJCS 2018; 6(1): 950-952

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Received: 15-11-2017

Accepted: 20-12-2017

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Management of *Lantana camara* poisoning in a bull

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Abstract

Lantana camara is a noxious weed found in tropical and subtropical regions including south East Asia. A bull was brought to Teaching Veterinary Clinical Complex, C.V. Sc., A.A.U. from North Guwahati area with a history of ingestion of leaves of this noxious plant showing signs of intoxication viz. diarrhea, weakness, liver damage and photosensitization. The liver enzyme levels were also recorded to be very high. Based on history, clinical signs and biochemical parameters, it was diagnosed to be a case of *Lantana camara* poisoning the bull was treated with supportive therapy and provided proper care and management for recovery. Results revealed that post treatment with supportive therapy, there was significant improvement in the condition of the affected animal with symptoms receding and the animal gradually returning to normalcy. From this case study it can be inferred that proper and timely supportive treatment is effective in ameliorating signs of *Lantana camara* poisoning. However, preventive measures should always be put in place which can significantly help in averting the occurrence of poisoning.

Keywords: *Lantana camara*; liver damage; photosensitization; supportive therapy

Introduction

Lantana camara is known to be toxic to livestock such as cattle, sheep, horses, dogs and goats. The active substances causing toxicity in grazing animals are the pentacyclic triterpenoids which inflict significant liver injury and photosensitivity (Ross, 1999) [1]. The pentacyclic triterpenoids are hepatotoxic compounds known as lantadenes. There are four types of Lantana leaves toxin lantadene A (LA), Lantadene B (LB), Lantana C (LC) and Lantana D (LD) (Fig.1). Among the known compounds present in lantana, LA is the most hepato-toxic. The toxic effects of this plant are evident both in ruminants and in non-ruminants (Sharma *et al.*, 2007) [2]. This toxin has been found to be absorbed through entire GIT (gastrointestinal tract), mainly small intestine (Sharma *et al.*, 2007) [2]. It affects the liver and kidneys of ruminants and leads to photosensitization. Following ingestion of the toxins, animals usually die within 2 to 4 days in acute cases manifesting signs of weakness, sluggishness, bloody diarrhea, edematous ears and eyelids, cracks and fissures on muzzle and other non-hairy parts, conjunctivitis, ulceration of the tip and under surface of the tongue (if un-pigmented), pale conjunctival, vulvar or vaginal mucous membranes and sclera of eye. The acute lantana toxicity can be induced either by the leaf powder or by partially purified lantadene powder (Sharma & Makkar, 1981) [4]. The toxicity of lantana camara poisoning is mostly ascribed to its absorptive capacity, underpinned by its resemblance to cholesterol, the absorption of which is known to be facilitated by esterification with cholesterol esterase. The bile canalicular membranes are the primary site of lantana toxins. The intrahepatic cholestasis in lantana poisoning causes photosensitization due to retention of phyloerythrin which is normally secreted in bile (Trauner *et al.*, 1998) [5].

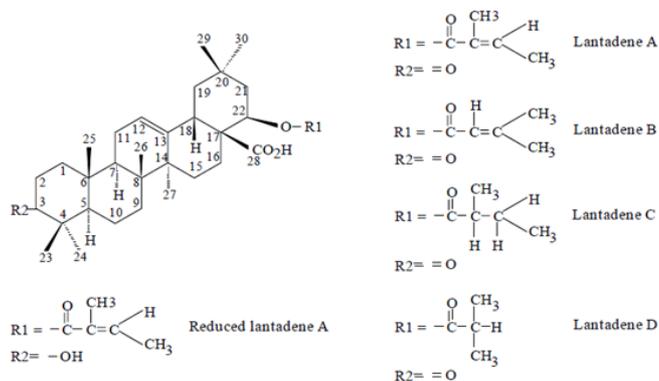


Fig 1: Chemical structure of Lantadene (O.P. Sharma)

Materials and Method

A case study: History and symptoms

A three year old bull was brought to a veterinary dispensary located in North Guwahati area with the history of loss of appetite and brittle skin studded with yellow pigmentation. The owner reported that the animal had consumed *Lantana camara* leaves while grazing in the field the other day. (locally known as 'Bonphul', Fig 2). On clinical examination, the bull revealed signs of anorexia, dullness, fever, decreased ruminal motility, pale and yellow mucus membrane and photosensitization (Fig. 2). The skin had become highly edematous with subsequent weeping and culminating in necrosis, aggravated further by constant rubbing of the skin on hard objects.

The AST and ALT activities were estimated by using AST & ALT kit (Modified International Federation of Clinical Chemistry, IFCC method, Aspen laboratories) to determine the condition of Liver.

Biochemical studies

A liver function test was carried out to evaluate the functioning of the liver. Results revealed that the AST level was significantly brought down to the normal range post treatment (48.21U/L) from an elevated blood plasma level prior to any treatment (112.43U/L) (table 1). The ALT level was also reduced post treatment (17.56 U/L) from an elevated plasma concentration prior to treatment (64.35 U/L) indicating improvement in the functioning of the liver. The GGT level was also recorded to be lower post treatment (19.45 U/L) as compared to the GGT level prior to treatment (72.12 U/L) (table 1).

Table 1: AST, ALT and GGT level of the buffalo pre and post treatment (U/L)

Liver enzymes	Pre-treatment	7 days post treatment	14 days post treatment
AST	112.43	61.44	48.21
ALT	64.35	26.25	17.56
GGT	72.12	29.73	19.45

Diagnosis, Treatment and Discussion

Based on history clinical signs and biochemical analysis, it was diagnosed to be a case of *Lantana camara* poisoning. A strict treatment regimen was followed stretching for a period of 7 days. Normal saline was infused intravenously at the rate of 1000 ml twice daily for 7 days to rehydrate the animal. Oral administration of Magnesium sulphate (MgSO₄) as a purgative was done to expel the ruminal content. Chlorpheniramine maleate, an anti-histaminic was injected @10 ml for 5 days once daily to reduce skin irritation. A liver

support (Belamyl) was also provided on alternate days to counter liver disease. A course of antibiotic (Intacef Tazo) was also given at the rate of 20mg/kg body weight for 7 days to fight secondary infection. Application of topical ointment (Charmil) twice daily was done over the affected areas for healing of the lesion. The owner was advised to keep the animal in the shadows and under stall fed conditions until the lesions subsided. In the few days following treatment, significant improvement was noticed in the animal and most of the troubling symptoms had disappeared. There was rapid gain in appetite and weight and the animal recovered almost completely in one month time post treatment. The Even though no specific antidote has yet been discovered supportive therapy and preventive measures have proven to be highly effective in the treatment and control of *Lantana camara* poisoning. (Oyourou *et al.*, 2013) [7]. There are some conventional treatment methods which can be applied viz. keeping the intoxicated animals away from light; providing fluid therapy and adequate feed. administration of activated charcoal at the rate of 5g/kg body weight with electrolyte in stomach tube within 24hours to reduce the absorption of lantadenes. Bentonite is a cheaper alternative to charcoal by takes longer time to act.. Oral administration of liver tonics and Vitamin B-complex administration and enzymatic removal of bilirubin by bilirubin-oxidase are effective in jaundice (McSweeney & Pass, 1982; Sharma *et al.*, 2007) [2, 8].



Fig 2: *Lantana camara* leaves



Fig 3: Photosensitization due to *Lantana camara* poisoning in bull

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