



## Case Report

### Efficacy of *Musa balbisiana* in Hepato-Biliary Dysfunction Affected with *Lantana camara* Poisoning in Cattle

Dipak Kumar Sarma<sup>1</sup>, Prasanta Kumar Boro<sup>1</sup>, Poznur Hussain<sup>2</sup>, Phulmoni Gogoi<sup>2</sup> and Manav Sharma<sup>1\*</sup>

<sup>1</sup>Teaching Veterinary Clinical Complex, Lakhimpur College of Veterinary Science, Assam Agricultural University, Joyhing, North Lakhimpur-787051, Assam, India; <sup>2</sup>College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati-781022, Assam, India

\*Corresponding author: manavs46@gmail.com

**Article History:** Received: July 09, 2015      Revised: August 22, 2015      Accepted: August 30, 2015

#### ABSTRACT

*Lantana camara* poisoning in cattle is very frequently encountered in Assam of India. This communication seems to be the first report of successful use of banana stem (*Musa balbisiana*) for management of clinical cases of *Lantana camara* poisoning in cattle. Clinical cases reported to Teaching Veterinary Clinical Complex of Lakhimpur College of Veterinary Science were considered for the present investigation. Clinical symptoms recorded were photosensitization, sloughing of skin of different parts of body, icterus etc. Diagnosis was done on the basis of careful anamnesis, clinical investigation and blood reports. Blood analysis revealed very high level of AST (165 $\mu$ /L), ALT (69 $\mu$ /L), serum bilirubin (13.9mg/dl), BUN (42mg/dl) and creatinine (2.8mg/dl) at pre treatment estimation. The white banana stem, obtained after removal of few layers of base of the leaves were allowed to feed ad-libitum as curative therapy as well as sole feed along with Anistamine (Chlorpheniramine maliate at the dose rate of 100mg/day) injections, Intalyte (20% dextrose with electrolytes) at the dose rate of 20 ml/kg as supportive therapy. All cows responded well to the given treatment regimen and returned to normal or nearing normal within 10 to 15 days post treatment. Blood parameters analyzed substantially returned towards normal after treatment. Therefore, it could be concluded that in *Lantana camara* poisoning in cattle pseudo stem of *Musa balbisiana* can effectively be used as only feed as well as therapeutic due to its hepatoprotective and strong antioxidant properties.

**Key words:** *Lantana camara*, Photosensitization, Icterus, *Musa Balbisiana* stem

#### INTRODUCTION

Animals naturally avoid the consumption of poisonous plants unless there is scarcity of green fodder. The *Lantana camara* is one of the poisonous plants, which is quite abundant in Assam. This plant is known to produce hepatobiliary dysfunction and kidney damage due to elevated hepatic and renal Xanthine Oxidase activities with the help of Lantadine, the phytotoxin present in this plant (Sharma *et al.*, 1981). The phylloerythrin, a break down product of chlorophyll, accumulates in blood due to impaired hepato biliary excretion (Patel *et al.*, 2012, Cooper, 2007) and deposited in the skin. Phylloerythrin absorbs and releases light energy initiating a phototoxic reaction especially on hairless part of the body, when exposed to sun light (Kahn, 2010). There is no specific antidote available

against this plant (Sharma *et al.*, 2007). However, the activated charcoal, electrolyte (Michael and Stewart, 1984) and administration of laxative, antihistamine, liver supportive drugs and oral bile salt replacement from exogenous source along with the provision of dark and cool place are advocated (Hussain, 1990). *Musa balbisiana* is a species of banana, abundantly available in Assam, has already been popular for its antioxidant, hepatoprotective antiurolithiatic and many other medicinal properties (Orhan 2001, Mudoj *et al.*, 2011, Hemanta *et al.*, 2014 and Sharma *et al.*, 2014). Hence, the innermost stem which is devoid of chlorophyll is presumed to be the most suitable diet and specific curative therapy for *Lantana camara* poisoning case. Therefore, a clinical trial was carried out in seven cases of *Lantana camara* poisoning cases of local cow, to find out the efficacy of *Musa balbisiana* stem feeding.

**Cite This Article as:** Sarma DK, PK Boro, P Hussain, P Gogoi and M Sharma, 2015. Efficacy of *Musa balbisiana* in hepato-biliary dysfunction affected with lantana camara poisoning in cattle. Inter J Vet Sci, x(x): xxxx. www.ijvets.com (©2015 IJVS. All rights reserved)

## MATERIALS AND METHODS

### History and clinical findings

Seven indigenous cows were presented to the Teaching Veterinary Clinical Complex with signs of restlessness on exposure to sunlight and sheltering in the shade (Fig 1.), anorexia, constipation, edematous swelling and sloughing of muzzles (Fig 3.), ears, peri-anal and peri vulvar regions. In some cows extensive cutaneous lesions were observed on back, neck and other parts of the bodies (Fig 2). The distinct signs of icterus could be seen with yellowish discoloration of conjunctivae and hairless part of the skin in three of the cows (Fig 4).

Temperature recorded was within 102-103°F. Ruminal movement was very weak in all the cows. The average values for blood Aspartate Transaminase and Alanine Transaminase (AST and ALT) serum bilirubin, Blood Urea Nitrogen (BUN) and creatinine were 165 $\mu$ /L, 69 $\mu$ /L, 13.9mg/dl, 42mg/dl and 2.8mg/dl, respectively. A state of anaemia was evident with average 5.8 g/dl of Haemoglobin (Hb). On the basis of history of consuming the foliage of *Lantana camara*, clinical observations and laboratory findings, the cows were diagnosed to suffer from hepatogenous photosensitization due to *Lantana camara* poisoning.

### Treatment

The white or ivory colored pseudo stem of *Musa balbisiana* obtained after removal of few layers of base of the leaves were allowed to feed ad-libitum round the clock. The stems were cut into small pieces of about one inch long. In case of more anorexic cows feeding was encouraged by mixing the stem pieces with wheat bran or rice polish to make it more palatable. Anistamine (Intas Pharmaceuticals Ltd.) was administered @ 100mg/day/cow for 5 to 7 days and for rehydration Intalyte (Intas Pharmaceuticals Ltd.) was infused at dose rate of 20 ml/kg/cow/day till restoration of normal rate of feeding. Ruminal motility and function were up-regulated by replacing exogenous bile salt collected from slaughtered goats or fish. External wounds were dressed regularly with antiseptic solution (Povidon iodine 5%) and herbal antiseptic fly repellent spray. Owners were advised to shelter the animals in shade without further exposure to sunshine for five to seven days or till recovery.

## RESULTS AND DISCUSSION

All the treated animals recovered gradually and within five to nine days regained normal gesture and appetite. The frequency of defecation, urination and rumination was returned about to normal rate with normal colour and consistency of dung. The average post treatment values of AST (125u/L), ALT (39u/L), serum bilirubin (0.78mg/dl), BUN (28mg/dl), Creatinine (2.2mg/dl) and Hb (11g/dl) estimated after fifteen days of initiation of treatment were within the physiological range (Kahn, 2010). However, the values could not be compared due to paucity of similar literatures. The recovery of all the cows treated in this study may be due the multiple therapeutic values of the *Musa balbisiana* used as sole curative therapy and diet. The juice of *Musa balbisiana* stem is already known to its hepatoprotective



Fig 1: Sheltering in the shade



Fig 2: Sloughing of skin



Fig 3: Eczema of muzzle



Fig. 4: Yellowish discoloration of visible mucous membrane

(Orhan, 2001; Mudoi *et al.*, 2011; Sharma *et al.*, 2014) and strong antioxidant properties (Kailash and Varalakshmi, 1992; Kumar *et al.*, 2012), that stabilizes the free radicals released as a result of *L. camara* poisoning

(Sharma *et al.*, 1981). Moreover, the banana stem was devoid of chlorophyll and as the animals were exclusively fed on it, hence, further production of phyloerythrine could be prevented to put a halt on aggravated photosensitization. Besides, rich fiber, minerals and water content might have fulfilled the requirements of normal rumen function. The excretion of phytotoxin and existing phyloerythrine were perhaps been accelerated by the diuretic property of stem juice (Ponnambalam and Sellappan, 2014). The probable secondary bacterial infections could be well guarded with the antibacterial activity (Kumar *et al.*, 2012) of the juice of *Musa balbisiana*'s stem.

Hence, an inference could drawn that the pseudo stem of *Musa balbisiana* can effectively be used as therapeutic as well as sole feed ingredient in *Lantana camara* poisoning in cattle and it opens up a virgin field of research.

### REFERENCES

- Cooper RG, 2007. Accidental Poisoning from *Lantana camara* (Cherry Pie) Hay Fed to Ostriches (*Struthio camelus*). Turk J Vet Anim Sci, 31: 213-214.
- Patel HB, MM Chirag, KM Shailesh, BP Hitesh and SP Sushant, 2012. *Lantana camara* Poisoning in Mehsana Buffaloes: A Profile of Photosensitization. Wayamba J Anim Sci, 578X: 371-372.
- Hemanta MR, VK Mane and A Bhagwat, 2014. Analysis of Traditional Food Additive Kolakhar for its Physico-Chemical Parameters and Antimicrobial Activity. J Food Process Technol, 5: 11
- Hussain P, 1990. Hepato-ruminal dysfunction associated with *Lantana camara* poisoning in cattle, 1990, M.V.Sc. Thesis, submitted to Assam Agricultural University, Guwahati-22.
- Kahn CM, 2010. Miscellaneous Systemic Dermatoses. The Merck Veterinary Manual, 10<sup>th</sup> edition, Merck & Co, USA. p-890, 2828.
- Kailash P and P Varalakshmi, 1992. Effect of banana stem juice on biochemical changes in liver of normal and hyperoxaluric rats. Indian J Exp Biol, 30: 440-442.
- Kumar KSP, D Bhowmik, S Duraivel and M Umadevi, 2012. Traditional and Medicinal Uses of Banana. J Pharmacognosy and Phytochemistry, 1: 51-63.
- Michael AP and C Stewart, 1984. Administration of activated charcoal for the treatment of *Lantana* poisoning of sheep and cattle. J Applied Toxicol, 4: 267-289.
- Mudoi T, DC Deka, S Tamuli and R Devi, 2011. Fresh ripe pulp (FRP) of *Musa balbisiana* fruit has antiperoxidative and antioxidant properties: An in vitro and in vivo experimental study. J Pharmacy Res, 4: 4208-4213.
- Orhan I, 2001. Biological Activities of *Musa* Species. J Fac Pharm, 30: 39-50.
- Ponnambalam H and M Sellappan, 2014. ICP-MS technique for quantification of potassium and sodium in spray-dried extract of shoot juice of banana plant (*Musa balbisiana*) responsible for anti-urolithiatic and diuretic activity. Int J Med Chemistry & Analysis, 4: 170-174.
- Sharma OP, HPS Makkar, RN Pal and SS Negi, 1981. Fragility of erythrocytes in animals affected by *Lantana poisoning*. Clin Toxicology, 18: 25-35.
- Sharma OP, S Sharma, V Pattabhi, SB Mahato, and PD Sharma, 2007: A review of the hepatotoxic plant *Lantana poisoning*. Crit Rev Toxicol, 37: 313-352.
- Sharma P, R Savita, SN Ojha, SK Sood, and JC Rana, 2014. Indian Herbal Medicine as Hepatoprotective and Hepatocurative: A Review of Scientific Evidence. Life Sciences Leaflets, 49: 61-115.