www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; 11(12): 1766-1768

www.thepharmajournal.com
Received: 08-10-2022
Accepted: 14-11-2022

Dr. Jigar Raval
Department of Veterinary Medicine, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Anand, Gujarat, India

Dr. Sunant Raval
Department of Veterinary Medicine, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Anand, Gujarat, India

Dr. Dashrath Sadhu
Department of Veterinary Medicine, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Anand, Gujarat, India

Dr. Keshank Dave
Department of Veterinary Medicine, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Anand, Gujarat, India

Corresponding Author:
Dr. Jigar Raval
Department of Veterinary Medicine, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Anand, Gujarat, India

Therapeutic management and haemato-biochemical alteration due to *Lantana camara* poisoning in cattle

Dr. Jigar Raval, Dr. Sunant Raval, Dr. Dashrath Sadhu and Dr. Keshank Dave

Abstract
One of the most well-known poisonous weeds found worldwide is *Lantana camara*. Nearly all animals exposed to lantana develop hepatotoxicity, photosensitization, and intrahepatic cholestasis. This present study was conducted in the Department of Veterinary Medicine, College of Veterinary Science and A.H., Anand. In which total 15 animals were included with history of ingesting *Lantana camara* during grazing and feeding. Affected cattle displayed lesions like anorexia, diarrhoea, icterus, sloughing off of the superficial layer of skin, particularly on the back, at ventral abdomen, ear pinna, around eyes and mouth, around the udder, and on the tail of the animal. The affected animal showed increased aspartate aminotransferase (AST), blood urea nitrogen (BUN), creatinine, bilirubin with decreased TEC, Hb, PCV, albumin and globulin concentration. The animal was treated with Dextrose 5% with liver tonic, antibiotic, NSAID, antihistaminic and antiseptic solution application for skin lesions., For a complete clinical recovery, therapy lasted 30 days.

Keywords: *Lantana camara*, photosensitization, hepatotoxicity, cattle

Introduction
Photosensitization is a biophysical phenomenon that occurs when skin becomes sensitive to certain wavelengths of sunlight, particularly in the UV range of the spectrum, due to the presence of photo-dynamic chemicals in the skin sunburn (Andrews *et al.*, 2004) [2]. Although it primarily affects sheep, cattle, and horses, it can also affect other species. The field's most often impacted species are cattle (Pass, 1986) [5].
In and surrounding pasture area, a variety of plant species that cause photosensitization as a secondary disorder can be discovered. One such deadly weed that is frequently encountered in tropical areas is *Lantana camara*, and it is widely distributed throughout Gujarat and other Indian states. After consuming the entire plant, livestock became poisoned and experienced liver damage, renal tubular dysfunction, and secondary photosensitization (Patel *et al*., 2012) [6].

Material Method
The present research work was undertaken in months of august and September 2022. The study was conducted at the Department of Veterinary Medicine in collaboration with the Veterinary Clinical Complex of the College, Anand.
In total, 15 cattle with a history of ingesting *Lantana camara* during grazing and feeding were included in this study. These cattle displayed lesions like anorexia, diarrhoea, icterus, serous fluid oozing out from affected skin lesions, sloughing off of the superficial layer of skin, particularly on the back, at ventral abdomen, ear pinna, around eyes and mouth, around the udder, and on the tail of the animal.

Fig 1: Sloughing of Skin due to Photosensitization occurs due to poisoning of *Lantana camara*

Whole blood samples from the affected animals were drawn from their jugular veins in vacutainer containing an anticoagulant, tri-potassium ethylene diamine tetra-acetic acid (K3EDTA), and clot activator vials. On the same day, these blood samples were delivered to the lab and processed. At the Veterinary Clinical Complex, Anand Veterinary College, Anand, estimation of haematological parameters was performed using an auto-haematological analyzer machine (Abacus junior Vet-5). The blood samples in clot activator vials were allowed to clot at room temperature (26 ± 2 ºC), and serum was harvested by centrifugation at 3000 rpm for 5 minutes (Eppendorf 5804 R, Germany) and utilized for biochemical analysis. All the biochemical parameters were analysed by using standard procedures and assay kits on clinical chemistry analyser (CKK 300).

Treatment

The animals received treatment for five days with intravenous 5% dextrose normal saline, intramuscular Enrofloxacin at 5 mg/kg for prevention of secondary bacterial infection, intramuscular chlorpheniramine maleate at 0.5 mg/kg for skin allergy, intramuscular liver extract and B complex vitamin supplements to support liver and intramuscular meloxicam at 0.5 mg/kg to reduce the inflammation of skin. The owners suggested applying antiseptic (Betadine) solution externally to skin lesions on a regular basis and to give liver tonic for 15 days through orally. The owner was instructed to keep the animal in the shade and out of direct sunshine.

Results and Discussions

Due to the poisonous principle lantadene, *Lantana camara* is one of the ten most dangerous weeds in the world and causes hepatotoxicity and secondary photosensitization in grazing cattle. After eating a photodynamic substance, no specific medication can stop photosensitization from happening. As soon as the symptoms show up, they must be treated. The approach to reducing the disease's consequences on the animal is early recognition of the signs. When lantana is ingested, the liver's ability to excrete phylloerythrin (a photosensitive agent) is compromised as a result of the gastrointestinal tract's microbes' breakdown of chlorophyll. The build-up of phylloerythrin in the liver will result in hepatic damage and leaking of liver enzymes. Because a damaged liver is unable to adequately process phylloerythrin, it builds up in the peripheral circulation. In nonpigmented skin, circulating phylloerythrin triggers the photosensitization reaction (Cynthia, 2005, Haargis and Ginn, 2007) [3, 4].

Table 1: Haemato-biochemical alteration due to poisoning of *Lantana camara* Poisoning in Cattle

S. No.	Parameters	Parameters Before treatment (day0)	After treatment (day15)	Reference range
1	TEC(×10^6/µl)	3.60±0.16	5.20±0.22	5-10
2	Hb(gm/dl)	7.35 ± 0.54	10.50±0.37	8-15
3	TLC (× 10^3/µl)	14.21±1.83	12.78±1.67	4-12
4	PCV (%)	31.67± 2.50	36.16±3.12	24-46
5	Lymphocyte (%)	41.32±2.27	43.14±2.31	45-75
6	Neutrophil (%)	51.15±4.31	53.21±3.91	15-45
7	Eosinophil (%)	06.21±0.32	02.32±0.29	0-20
8	Monocyte (%)	01.00±0.06	01.00±0.061	0-8
9	Total Protein (g/dl)	5.32±1.54	6.43±1.86	6-8
10	Albumin (g/dl)	2.61±0.98	3.09±0.76	2.4-3.5
11	Globulin (g/dl)	2.72±0.68	3.02±0.77	3.6-4.5
12	AST (IU/l)	203.00±39.21	132.21±33.59	58-100
13	BUN (mg/dl)	29.21±4.21	26.46±3.65	6-22
14	Creatinine (mg/dl)	1.75±0.33	1.21±0.25	0.5-1.1

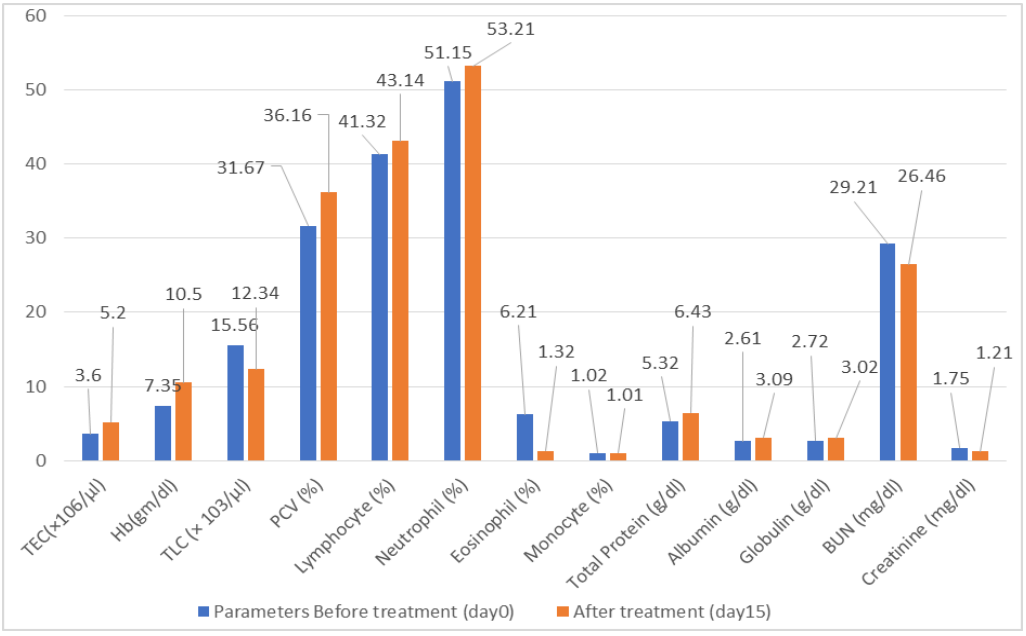

Chart 1: Haemato-biochemical alteration due to poisoning of *Lantana camara* Poisoning in Cattle

In ruminants, hepatogenous photosensitization (HPS) is the most prevalent type of photosensitization (Wisloff *et al*., 2002) [9]. Blood analysis revealed poor haematological parameters, namely Hb, PCV, and TEC which was also reported by Ali *et al*. (1995) [1] Where a biochemical study revealed unusually high levels of AST, serum bilirubin, BUN, and creatinine at pre-treatment assessment of the present case, which was similarly described by Sarma *et al*. (2015) [8].

The suggested course of treatment for hepatogenous photosensitivity is to stop being exposed to the sun directly and to cure any liver damage (Radostits *et al*., 2007) [7]. This was successful since after 30 days, as was also seen in the present study, the skin lesions vanish and the affected animals' appetite and physical condition were restored to normal.

Conclusion

Due to *Lantana camara* poisoning, photosensitization is a prevalent but rarely reported condition, and field veterinarians are unable to determine its cause. The country's farmers are likewise not aware of the situation, resulting in significant economic loss that may be avoided with the earlier diagnosis and treatment outlined above.

Acknowledgment

For the resources and support given for this work, the authors are grateful to the Head of the Veterinary Clinical Complex, the Dean of the Veterinary College, and the KU Anand authorities.

References

1. Ali MK, Pramanik AK, Guha C, Misra SK, Basak DK. Gross and histopathological changes in experimental *Lantana camara* poisoning in goats. Indian Journal of Animal Health, 1995;34:17-18.
2. Andrews AH, Blowey RW, Boyd H, Eddy RG. Photosensitization. Bovine Medicine Diseases and Husbandry of Cattle. 2nd Edition; c2004. p. 884-885.
3. Cynthia KM. Photosensitization. Merck Veterinary Manual 9th edition; c2005. p. 794-796.
4. Haargis AM, Ginn PE. The integument. In: McGavin, M.M., Zachary, J.F. (Eds.), Pathologic Basis of Veterinary Disease, fourth ed. Mosby/Elsevier, St. Louis; c2007. p. 1107–1261.
5. Pass MA. Current ideas on the pathophysiology and treatment of lantana poisoning of ruminants. Australian Veterinary Journal. 1986;63:169-171.
6. Patel HB, Modi CM, Mody SK, Patel HB, Parekar SS. *Lantana camara* poisoning in mehsana buffaloes: A profile of photosensitization. Wayamba Journal of Animal Science. 2012;1:371-372
7. Radostitis OM, Gay CC, Hinchcliff KW, Constable P. Veterinary Medicine: A Textbook of the Diseases of Cattle, Horses, Pigs, Sheep and Goat, 10th ed. W.B. Saunders, Oxford; c2007.
8. Sarma DK, Boro PK, Hussain P, Gogoi P, Sharma M. Efficacy of Musa balbisiana in hepato-biliary dysfunction affected with *Lantana camara* poisoning in cattle. International Journal of Veterinary Science. 2015;4(4):231-233.
9. Wisloff H, Wilkins AL, Scheie E, Flaoyen A. Accumulation of Sapogenin Conjugates and Histological Changes in the Liver and Kidneys of Lambs Suffering from Alveld, a Hepatogenous Photosensitization Disease of Sheep Grazing *Narthecium ossifragum*. Veterinary Research Communications. 2002;26:381-396