



***Blumea lacera* Plant Poisoning in Cattle; Epidemiology and Management**

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ABSTRACT

Plant poisoning in grazing animals is more common in Bangladesh, especially during the scarcity period. The present study was undertaken to find out the epidemiology of *Blumea lacera* fresh plant poisoning and its management in cattle. A total of 765 suspected clinical cases were examined, of these 48 were diagnosed as *Blumea lacera* plant poisoning. The poisoning was found more in local cattle (92%) than that of crossbred (8%) cattle. Most of the cases were found in autumn (71%), in compare to summer (23%) and winter (6%). The highest occurrence of poisoning was observed in cattle of 6 months to 2 years of age (57%) in comparison to other age category. Therapeutic response (16%) was found if treatments were given within 4 hours of ingestion of the plant and the effective treatment was a combination of laxative, normal saline, vitamin B₁. Veterinarian can apply this treatment during *Blumea lacera* poisoning in animals.

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Introduction

Medicinal plants are the oldest friends of mankind which have been used for centuries as medication in different diseases. About 7500 plant species have been used for many years in the traditional medicinal systems of India including ethno medicines (Gautam et al., 2007). Many plants have been identified for their antibacterial activities and drugs are made throughout the world (Balandrin et al., 1985; Kinghorn, 1992) and in India (Ahmad and Beg, 2001; Dabur et al., 2004; Duraipandiyani et al., 2006). The local name of the plant *Blumea lacera* is Siyalmutra, it has camphoraceous smelling, tall stem, and corymbosely branched herb. The plant is normally found in roadside areas and grows wild. Many ethnobotanical uses of this plant have been recorded by different authors (Varshney and Sing, 2008; Oudhia et al., 1998; Acharya and Pokhrel, 2006). It grows in uncultivated lands all over Bangladesh. Essential oil from leaves have analgesic, hypothermic and tranquilizing activities (Ghani, 2003). The plant also exhibited anti-leukemic, antiviral (Chiang et al., 2004) and cytotoxic (Uddin et al., 2011) activities against breast cancer cells. *Blumea lacera* is one of the common rabi weeds of India (Oudhia et al., 1999). Flowering time January to April (Agharkar, 1991). The common

phytochemicals of this plant are alkaloid, glycosides, flavonoids, saponin and steroids (Rahman et al., 2013). Few reports have been published on antibacterial activity of this plant by researchers (Ragasa et al., 2007; Mahida and Mohan, 2006). The medicinal plants in higher dose or over ingestion can cause toxicity in mammals. Plant poisoning is very common in livestock particularly in grazing animals. During the scarcity period they ingest food as well as nonfood plants. Absence of specific grazing area in Bangladesh confounds the problems of toxicity due to wide distribution of non food toxic plants. This plant is available in roadside areas and in grazing fields of Bangladesh. Cattle are affected by its toxic effects, when feeds on this plant. The toxic effect of the plant *Blumea lacera* is more common in the country especially in north Bengal, greater Mymensingh area and hilly area of Bangladesh. This may causes animal death leading to huge loss in livestock sector but any scientific study or fruitful research on *Blumea lacera* plant poisoning had not yet been done in the country. The present study was thus designed to find out the toxic effects of *Blumea lacera* plant poisoning, diagnosis and its management in cattle.

Materials and Methods

The study was conducted at Upazilla Livestock Hospital, Pirganj, Thakurgaon during the period of March 2013 to February 2014 to investigate the occurrence of *Blumea lacera* plant (Figure 1) poisoning in cattle. A total of 765 cattle were examined during the period of study in upazila veterinary hospital, Pirganj. Out of them 48 cattle were suspected as *Blumea lacera* plant poisoning on the basis of owners complaints, clinical history and clinical signs. Prior to general clinical examinations age, sex, breed, type and owners complaints were recorded in the registered book. Clinical history was taken from the owners or attendants of the animal. History about presence of toxic plant *Blumea lacera* in the grazing area or feed stuff was taken from owners. Different parts and system of the body of each affected animals were examined by using the procedures of palpation, percussion and auscultation. The Physical conditions of affected animals were observed. Abnormal behaviors, posture and gait were found in most of the animals. The clinical signs of salivation, nasal discharge, distention of abdomen were prevalent. Affected animals were examined for all body functions. Temperature, pulse, respiration, defecation and urination of animals were recorded. The observed clinical signs after ingestion of toxic plant *Blumea lacera* were- On first day-normal body temperature was observed, animals were in off feeding conditions, defecation was stopped but urination was found normal, abdominal distension was found (Figure 2). On second day- extensive abdominal distension occurred, mucus membrane of animals was pale. On third day- feces in the rectum was found hard in consistency after removal or expulsion of that feces, clotted dark coffee or black color blood came out through rectums (Figure 3). Common post mortem lesions were, no clotted blood found in heart and blood vessel, liver was fragile in consistency, absence of blood in muscle, subcutaneous tissue and blood vessels were observed but hemorrhage was found in intestinal wall, clotted coffee or dark colored blood was found in abdomen. Forty eight affected cattle were treated with different treatment regimens. Four treatment protocols were applied to treat the cattle. Only normal saline (Normal Saline NS, Opso Saline Limited, Bangladesh) @ 1000 mL/animal/IV was applied in five animals, Normal saline in combination with vitamin B₁ (THIANOMIN, Rephco Laboratories Limited, Bangladesh) @ 1000ml + 10ml /animal/IV was applied on 10 animals, Only 1% Methyline Blue @ 8.8mg / kg body weight/IM was applied in one animal and a combination of laxative (ACME'S MILK OF MEGNESIA, The Acme Laboratories Ltd, Bangladesh), Normal Saline, Vitamin B₁ @ 100 ml/animal/orally + 1000 ml/animal/IV + 10 ml/animal/IV was applied in 32 animals.

Data analysis

The epidemiological data were analyzed statistically by using Pearson chi square test with SPSS (version 16.0).



Figure 1 *Blumea lacera* plant

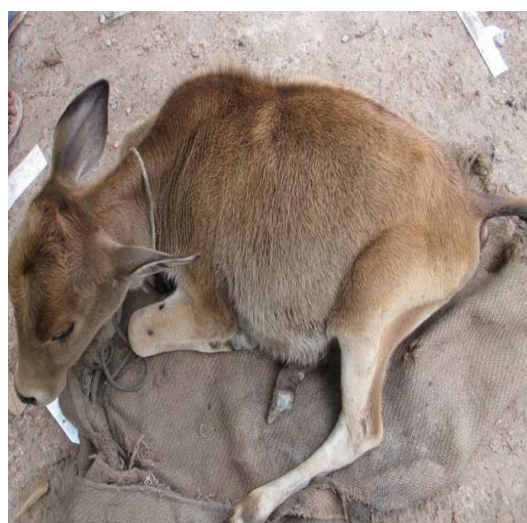


Figure 2 Cattle affected with poisoning



Figure 3 Blood from abdomen of affected animal

Result

The occurrence of *Blumea lacera* plant poisoning in cattle was 12 folds and 3 folds higher in autumn and rainy season in compare with winter (Table 1). Which was highly significant at 1% level ($P < .0001$). Most of the affected cattle were indigenous cattle of Bangladesh; some of cross breed cattle were to be found affected (Table 1). Younger animals between 6 months to 2 years

old were mostly affected (Table 1). Among 48 affected cattle during study period, 27 cases were found in animals between 6 months to 2 years of age and others were found above 2 years of age ($P=0.2207$). No poisoning was found less than 6 months of age. There is no significant difference among the male and female cattle to be affected by this plant poisoning. All male and female animals graze in the roadside area where the plants are available, during the scarcity of other grass or plant; they ingest the poisonous plant and become infected. A total of

48 affected animals were treated with different treatment regimens. Seven animals were treated within four hours of ingestion, among them only 5 (71%) animals were cured, two animals were died. The treatment was effective to animals; which were bought to hospital immediately after ingestion of poisonous plant (Table 1). About 16% animals were responded to the treatment when treated with laxative, normal saline and vitamin B₁ in compare to other treatment protocols.

Table 1 Epidemiology and management of *blumea lacera* poisoning in cattle

Parameter		Affected cattle	Percentage (%)	P value
Season	Rainy	11	23	(P<.0001)
	Autumn	34	71	
	Winter	03	06	
Age	6 months to 2 years	27	57	(P=0.2207)
	>2 years	21	43	
Breed	Cross Breed	04	08	(P=<.0001)
	Local breed	44	92	
Treatment protocol	Normal saline	T= 05, C=00	00	-
	Normal saline+Vitamin B ₁	T=10, C=00	00	-
	Laxative+Normal Saline+Vitamin B ₁	T=32, C=05	16	(P=<.0001)
	1% Methyline Blue	T=1, C=00	00	-

Legend: T = Treated, C = Cured

Discussion

Blumea lacera is one of the seasonal weed of Bangladesh. Hence the plant has cytotoxic activities (Uddin et al., 2011) it may become toxic if ingested in large quantities. The common phytochemicals of this plant is alkaloid (Rahman et al., 2013). At a lethal dose, the alkaloids produced violent clonic convulsions that led to respiratory failure (Rujjanawate et al., 2003), which leads to animal death. The plant is not found throughout the year. Mainly after rainy season the plant grows up and become easy accessible in the grazing area or roadside land. Cattle do not normally graze on the plant but high concentration in pasture or in hungry condition animal eat the plant. During winter and drought period the plant is not available in the grazing area so in that time poisoning occurs less than rainy season. Highest occurrence of poisoning in after rainy season may be due to well growth of plant after rain which may cause highest concentration of plant in pasture. The plant is available in May to December and flowering time of the plant is July to November (Rahman, 2013). Local cattle were mostly affected, this may be due to, farmers allow their local cattle to graze on different types of grazing field and during scarcity of grass the cattle take the poisonous plant as feeds and become affected. On the other hand the cross breeds are little allowed to graze on the field, they are reared mostly in intensive system within the shed. Hence the occurrences of poisoning in local cattle is highly significant in compare to cross bred cattle ($P<.0001$). The combined treatment was most effective due to their multiple actions as a time. The laxative effects of milk of

magnesia when consumed, serves to absorb fluids from elsewhere in the body (the areas surrounding the intestines, to be specific) and transfers all this fluid to the inner cavity of the intestinal tube and also retains the fluids that are already present therein. This leads to the bowels getting extended due to pressure of the accumulated fluids exerted from within. Such distension of the bowels leads to stimulation of the nerves that run along the intestinal walls, leading to increased activity in the colon, finally resulting in the emptying of intestinal contents. The vitamin B₁ plays essential role as co-enzyme for the metabolism of nervous system. Thus normalizes the nerve cell metabolism and supports the regeneration of nerve fibers and myelin sheath by activation of the metabolism, the natural repair mechanism and promote body's own repair mechanism and work in pain management. Normal saline minimizes the systemic toxicity by diluting the toxic ingredients in blood. Thus this combination was effective and statistically significant ($P=<.0001$) in the treatment of *Blumea lacera* plant poisoning in cattle.

Conclusion

The findings of the present study revealed that *Blumea lacera* plant is very toxic, causing severe poisoning to animals and in most of the cases affected animals are died even after treatment. High percentages of animals are affected after rainy season due to availability of this plant in the locality after rainy season. No effective treatments have been identified till now that can neutralize the

poison after appearance of clinical signs. However, present study suggested that combined treatment with laxative, normal saline and vitamin B₁ is effective, if the treatment is given immediately after ingestion of plant. More research should be performed to find out the active ingredients and toxic part of the the plant *Blumea lacera* with its toxic dose and to find out effective treatment against the toxicity of this plant in cattle. This study will be helpful for the researchers to provide guideline in carrying out detail study on *Blumea lacera* plant poisoning in animals.

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