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Biochemical and haematological evaluation of *Colocasia* plant leaves poisoning: A case study

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Abstract
The objective of the present study was to evaluate biochemical, haematological alteration of Colocasia plant leaves poisoning in crossbred cattle presented at Private Clinics in Guwahati, Assam. One crossbred cattle with history of excessive consumption of *Colocasia* plant, anorexia and hyper salivation were considered for studies. Alanine transaminase (ALT), aspartate transaminase (AST), haemoglobin (Hb), packet cell volume (PCV), total leucocyte count (TLC) were within normal range. The result revealed *Colocasia* plant poisoning may not exert any effect on some biochemical and haematological parameters in cattle.

Keywords: *Colocasia*, poisioning, biochemical, haematological parameters

1. Introduction
Colocasia esculenta crop is grown throughout the humid tropics and the corms/tubers serve as staple food throughout the sub-tripical and tropica region of the world [1]. *Colocasia* also known as Elephant's ear plant, kochu belong to Araceae family of plant. Most species in the Araceae contain raphide (calcium oxalate) crystals which are needle and arranged in compact bundle [2]. Upon chewing of the plant, the crystals are ejected from specialized explosive ejector cell (idioblasts) and may become lodged in the lining of the mouth, tongue and throat leading local inflammatory reactions which include burning, irritation and oedema of the buccal cavity, hypersalivation and aphonia [3]. Consumption of *Colocasia* leaves is uncommon in livestock, however its tubers are edible. Several studies on its tubers have been conducted [1] [4]. Toxicity of the crude aqueous extract of *Colocasia esculeenta* leaves in rats via oral route is low [1]. The blood system is one of the most sensitive target for toxic compounds, since blood is the main medium for transport of many drugs and xenobiotics [6]. Hence in the present study an attempt was made to evaluate if any biochemical and haematological alteration occurs after excessive consumption of the *Colocasia* (Fig-1) leaves in a naturally affected cattle.

Fig 1: *Colocasia* leaves

2. Materials and Method
2.1 Experimental Design
The study was carried out in a private clinic in North Guwahati, Assam.

2.2 Collection of sample
Blood sample from naturally affected cattle was collected aseptically for biochemical and hematological studies for three times on 0th day, 3rd day and 9th day of consumption of *Colocasia* leaves.

2.3 Analytical method

Alanine transaminase (ALT) and aspartate transaminase (AST) were analysed by commercialy available kit (Aspen Laborataries). Haemoglobin (Hb), packet cell volume (PCV), total leucocyte count (TLC) were analyzed by automatic haematolyzer at private laboratory.

3. Results

Result of the Alanine transaminase (ALT), aspartate transaminase (AST), creatinine, haemoglobin (Hb), packet cell volume (PCV), total leucocyte count (TLC) were analyzed by automatic haematolyzer were as mentioned in the Table-1

Table 1: Table showing different biochemical and haematological parameters

S. No	Parameters	Reference value*	Affected cattle		
1	Haemoglobin (Hb),	8-15 g/dl	0^{th} day	3^{rd} day	9^{th} day
			13 g/dl	12 g/dl	13 g/dl
2	Packet cell volume (PCV	24-26 %	24%	24 %	25 %
3	Total leucocyte count (TLC)	4-12×10^3/µL	6×10^3/µL	5×10^3/µL	6×10^3/µL
4	Alanine transaminase (ALT),	6.9-35 µ/L	16 µ/L	13 µ/L	13 µ/L
5	Aspartate transaminase (AST),	60-125 µ/L	73 µ/L	77 µ/L	77 µ/L

*Reference range from –The Merck Veterinary Manual [5]

4. Discussion

Biochemical result revealed aspatrate transaminase and alanaine transaminase were well with in the normal range on 0^{th} day, 3^{rd} day and 9^{th} day of consumption of leaves. In the liver, the serum aminotransferase (Asparate transaminase and Alanine transaminase) are known to increase markedly in response to the damage or disruption of the target organ [7]. This finding in the present study is clinically insignificant and less understood. Similar finding with less ALT and AST value in rat has been reported [1]. It may be due some hepatoprotective potential of the plant leaves, which needs further and specific scientific study.

Haematological results revealed that haematological parameters were within the normal range on 0^{th} day, 3^{rd} day and 9^{th} day of consumption of *Colocasia* leaves. It may be due to non-haemotoxic effect of the leaves. Similar finding was reported in rat [1].

5. Reverences

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