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

SN Yadav and K Bharali

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-tropical 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 [4]. Toxicity of the crude aqueous extract of Colocasia esculenta 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.

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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 Laboratories). 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>
<thead>
<tr>
<th>S. No</th>
<th>Parameters</th>
<th>Reference value*</th>
<th>Affected cattle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Haemoglobin (Hb),</td>
<td>8-15 g/dl</td>
<td>0th day 13 g/dl</td>
</tr>
<tr>
<td>2</td>
<td>Packet cell volume (PCV)</td>
<td>24-26 %</td>
<td>24% 24%</td>
</tr>
<tr>
<td>3</td>
<td>Total leucocyte count (TLC)</td>
<td>4-12x10³/µL</td>
<td>6x10³/µL 5x10³/µL</td>
</tr>
<tr>
<td>4</td>
<td>Alanine transaminase (ALT),</td>
<td>6.9-35 µ/L</td>
<td>16 µ/L 13 µ/L</td>
</tr>
<tr>
<td>5</td>
<td>Aspartate transaminase (AST),</td>
<td>60-125 µ/L</td>
<td>73 µ/L 77 µ/L</td>
</tr>
</tbody>
</table>


4. Discussion
Biochemical result revealed aspatrate transaminase and alanaine transaminase were well within the normal range on 0th day, 3rd day and 9th 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 0th day, 3rd day and 9th 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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