

COMMON TOXICITIES IN ANIMALS

A. Sharma*, R. H. Bhatt, K. G. Naik, K. J. Savaliya and I. B. Dharmapal

Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Junagadh, Gujarat, India-362001

*Corresponding author's mail: avaneesharma1512@gmail.com

DOI: <https://doi.org/10.5281/zenodo.19492917>

Abstract

Emergency toxicities in animals are commonly encountered in veterinary practice due to frequent exposure to toxic substances present in households, feed, medications, and the environment. Anti-nutritional factors (ANFs) such as trypsin inhibitors, thiaminase, gossypol, and cyanogenic glycosides are important contributors to toxicity, often requiring specific detoxification methods including heat treatment, vitamin supplementation, or chemical neutralization. Effective management of poisoned animals relies on rapid history taking, including identification of the toxicant, dose, and time of exposure, followed by prompt clinical assessment using the ABCD approach. Clinical signs may range from mild gastrointestinal disturbances to severe neurological, cardiovascular, and respiratory complications, including seizures, arrhythmias, hypoxia, and coma. Diagnosis is primarily based on history, clinical findings, and laboratory investigations. Treatment strategies focus on stabilization through fluid therapy, gastrointestinal decontamination, and supportive care. Decontamination techniques such as emesis, gastric lavage, and activated charcoal play a crucial role in limiting toxin absorption. Supportive therapies, including beta-blockers, vitamin K₁, hepatoprotective agents, and anticonvulsants, are used based on clinical presentation. Although specific antidotes are limited, agents such as fomepizole, 2-PAM, and naloxone may be utilized in selected cases. Early intervention and comprehensive management are essential to improve clinical outcomes.

Introduction

Accidental poisoning of animals occurs frequently because of the availability of toxicants in the household, the kitchen, the garden and because of prescribed medications. As a result, emergency clinicians commonly encounter poisoned patients. Management of the acutely poisoned patient includes seeking veterinary doctor, appropriate communication and proper history gathering, thorough physical examination, initial stabilization, and treatment to ensure the best outcome.

Table: Common Anti Nutritional Factors

Plant/Source	ANFs (Anti-Nutritional Factors)	Detoxification / Treatment
Sweet Clover Poisoning, Warfarin Poisoning, Sulfa Drugs	Dicoumarol (Antivitamin K)	Vitamin K ₁
Castor bean	Ricin or Lectin	Moist heat
Groundnut Cake (GNC)	Aflatoxin (B ₁ most toxic)	Treated with NH ₃ or NH ₄ OH
Lucerne (Alfalfa)	Saponin, Estrogenic substances	Mineral oil, Simethicone (Bloatosil)
Cotton seed cake	Gossypol (Not for poultry diet)	Iron supplement (FeSO ₄)
Subabul	Mimosine	Iron supplement (FeSO ₄)
Jowar (Sorghum), Sudan Grass	Dhurrin (Cyanogenic glycoside → Cyanide poisoning)	Sodium nitrite + Sodium thiosulphate
Linseed, Cassava (Tapioca)	Linamarin (Cyanogenic glycoside → Cyanide poisoning)	Sodium nitrite + Sodium thiosulphate

Obtaining An Appropriate History

The initial assessment of a suspected poisoning case should begin with the identification of the active ingredient involved, followed by determining whether the dosage ingested is within a toxic or potentially lethal range. It is essential to establish the time of exposure or occurrence to evaluate the progression of toxicity and guide treatment decisions. Information regarding any substances administered prior to presentation, such as milk, salt, or other home remedies, should also be obtained, as these may influence the clinical course. A thorough evaluation of observed clinical signs must be conducted to assess the severity and type of toxicosis. Concurrently, immediate attention should be given to emergency assessment using the ABCD approach, which includes ensuring a patent airway, evaluating breathing and respiratory function, assessing circulation and cardiovascular stability, and identifying any neurological dysfunction or disability.

Clinical Signs

Affected animals may exhibit a range of clinical signs including profuse salivation, nausea, restlessness, and weakness, which may progress to more severe manifestations such as seizures, cardiac arrhythmias, and depression. Signs of compromised oxygenation, including hypoxia and cyanosis of the mucous membranes, may also be observed. Prolonged capillary refill time (CRT) and reduced urine output indicate circulatory and renal impairment. In advanced cases, neurological deterioration may lead to pupillary dilation, coma, and potentially life-threatening complications.

Diagnosis

- Based on history
- Based on clinical signs
- Presence of toxic substance around animal
- Laboratory findings

Laboratory Findings

- Decrease in RBCs, hematocrit, plasma proteins
- Increase in Blood Urea Nitrogen

Treatment

1) Fluid therapy

- ✓ To correct or prevent dehydration
- ✓ To aid in detoxification by increasing renal excretion of toxicants by forced diuresis
- ✓ To treat decreased oxygen delivery with blood or plasma transfusions

- ✓ Normal isotonic fluids ex. NS, RL @ 4-8 ml/KG/hr

2) GI support

Decontamination

- ✓ To inhibit or minimize further toxicant absorption and to promote excretion or elimination of the toxicant from the body

✓ Decontamination categories may include ocular, dermal, inhalation, injection, gastrointestinal (GI), forced diuresis, and surgical removal to prevent absorption or enhance elimination of the toxicant.

A) Emesis

B) Gastric lavage

C) Activated charcoal

A) Emesis

✓ One of the primary ways of decontaminating veterinary patients is via emesis induction.

✓ emesis induction by

a. Xylazine @ 0.5 mg/kg BW IM

b. Apomorphine @ 0.03-0.04 mg/kg BW IV/IM

B) Gastric Lavage

Gastric lavage is considered a mainstay therapy for gastrointestinal decontamination, particularly when induction of emesis is unproductive or contraindicated. Its primary goal is to remove gastric contents, and it is generally more effective than emesis alone. However, in veterinary medicine, gastric lavage is performed less frequently due to its labor-intensive nature, as it requires intravenous catheter placement, sedation, endotracheal intubation with proper cuff inflation, gavage, activated charcoal administration, and careful measures to prevent aspiration, such as head elevation, antiemetic therapy, and controlled extubation.

Indication

Gastric lavage is indicated in cases involving large ingestions of substances such as vitamins or massive quantities of xylitol-containing gum, as well as when drugs are consumed at doses approaching the lethal dose for 50% of animals (LD₅₀). It is also recommended for drugs with a narrow margin of safety or those known to cause severe clinical signs, including calcium channel blockers, beta-blockers, cholecalciferol, organophosphates, baclofen, macrocyclic lactones, and metaldehyde. Additionally, gastric lavage may be necessary when the ingested material has the potential to form a bezoar or concretion such as bone meal, iron tablets, large amounts of chocolate, or

tremorgenic mycotoxins or when a foreign body is suspected.

C) Activated Charcol

Activated charcoal is most commonly used in ruminants for the management of toxicosis and is administered orally or intra-ruminally using a catheter. It is most effective when given as soon as possible after ingestion of the toxicant; however, administration along with a cathartic may still provide benefits even up to 6 hours post-exposure in certain cases of poisoning.

3) Supportive Therapy

- ✓ b-blockers (for severe tachycardia)
- ✓ vitamin K1 therapy (for long-acting anticoagulant toxicosis)
- ✓ Hepato-protectant such as S-adenosylmethionine (SAME) or N-acetylcysteine (NAC) against hepatotoxicants such as acetaminophen, xylitol, blue-green algae, sago palm (eg, Cycad), NSAIDs, and Amanita mushrooms.
- ✓ Diazepam in case of seizures

References

- Gupta, P. C. (2015). *Animal nutrition and feeding practices* (2nd ed.). CBS Publishers & Distributors.
- McDonald, P., Edwards, R. A., Greenhalgh, J. F. D., Morgan, C. A., Sinclair, L. A., & Wilkinson, R. G. (2011). *Animal nutrition* (7th ed.). Pearson Education Limited. <https://doi.org/10.4324/9781315833708>
- Reddy, D. V. (2001). *Applied nutrition: Livestock, poultry, human, pet, rabbit and laboratory animal nutrition* (3rd ed.). Oxford & IBH Publishing Co. Pvt. Ltd.

Cite this article: A. Sharma, R. H. Bhatt, K. G. Naik, K. J. Savaliya and I. B. Dharmapal. (2026). Common toxicities in animals. *Vet Farm Frontier*, 03(03), 5–7. <https://doi.org/10.5281/zenodo.19492917>

4) Antidot Therapy

- ✓ In veterinary practice, most toxicants do not have a readily available antidote.
- ✓ Few antidot available in veterinary practice
 - a. Fomepizole
 - b. 2-PAM
 - c. Naloxone

Conclusion

Emergency toxicities in animals require rapid recognition, accurate history taking, and prompt stabilization to reduce morbidity and mortality. Early gastrointestinal decontamination, appropriate supportive care, and timely administration of specific antidotes when available are critical components of successful management. Understanding common anti-nutritional factors and their detoxification strategies further aids in preventing and addressing toxicosis in livestock and companion animals. A systematic and evidence-based approach significantly improves clinical outcomes in poisoned patients.