

Nerium oleander Toxicity in Livestock: A Beautiful plant with a deadly Threat

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Introduction

Nerium oleander, commonly referred to as oleander, is an attractive evergreen ornamental shrub that is commonly planted alongside roadsides, in gardens, and around homes.



Figure 1. Nerium oleander (Pink, white and yellow color flowers).

This shrub is characterized by its beautiful pink, white, and yellow flowers. However, all parts of oleander are extremely poisonous to livestock.

What makes oleander toxic?

Oleander contains several cardio-active glycosides that are poisonous to livestock. Oleandrin and neriine are potent cardiac glycosides (cardenolides) that are present in all parts of the oleander plant. The toxic effects of dried Nerium oleander leaves on various livestock species differ. For instance, cattle are more sensitive to oleander toxicity than goats and sheep.

The estimated lethal dose (LD50) for cattle is 50 mg/kg, while for goats and sheep, it is approximately 110 mg/kg and 250 mg/kg, respectively.

How do animals get exposed to oleander?

Most human poisonings are accidental, and the same applies to livestock. Livestock poisoning mostly results from animals feeding on stem and leaves accidentally. Livestock are exposed to oleander through grazing in plants where the shrub grows abundantly or when the plant parts are carelessly tossed into animal dens. Oleander is not appetizing; hence animals are less likely to feed on it. However, during the dry season, animals might browse on the oleander plant because of its availability in the wild or due to a lack of sufficient pastures. Meanwhile, human error can also cause oleander poisoning among livestock herds.

For instance, the shrub can be cut and tossed into animal pens as mulch, chopped and mixed with pastureage, or left to grow close to water holes.

Mechanism of action

The oleander glycosides have action on heart. They inhibit the Na⁺/K⁺ ATPase pump, leading to increase in intracellular sodium and serum potassium which leads to a progressive decrease in the electrical conductivity of the heart muscle, causing conduction blocks and asystole.

Clinical signs

Clinical manifestations of oleander poisoning are predominantly cardiovascular and gastrointestinal. The signs are non-specific and begin within a few hours of ingestion of the plant. The animal appears depressed and weak. The animal may exhibit tachycardia and arrhythmia. Other common signs include vomiting, anorexia, nausea, and abdominal discomfort or pain. In addition, the animal might experience colic or pass blood in the faeces during the final stages of poisoning. In addition, the animal may exhibit cold extremities and dilated pupils. The animal may display weak muscles and a slow pulse and low blood pressure. Other signs may include drowsiness, unconsciousness, and even coma. The animal dies within 24 hours or 2 days after developing these signs. Signs of poisoning are primarily caused by peripheral circulatory collapse.

Post mortem lesions:

Severe catarrhal or hemorrhagic gastroenteritis may be observed, with congestion of the stomach and jejunum or parts of the digestive system. In addition, there are agonal haemorrhages, especially on the heart and serous mucous membranes.

Diagnosis



The diagnosis of oleander poisoning can be made based on the suspicion or confirmation of plant exposure history, clinical symptoms, post mortem lesions and lab analysis of feed or the animal's stomach contents. Detection of oleandrin in the feed or through the animal's post-mortem examination is essential.

Treatment

There is no safe home remedy for oleander toxicity. It is always recommended to contact a veterinarian professional to provide appropriate treatment as soon as possible. Treatment focuses on providing support to the animal and managing associated problems including irregular heartbeat and electrolyte imbalance. It is essential to seek veterinary attention at the first sign of poisoning since the condition can quickly become fatal.

Prevention

The best strategy for preventing oleander poisoning in livestock is to avoid cultivating the plant near residence or pastures and getting rid of plant debris. Always ensure that the feed is not contaminated with oleander leaves or flowers, and the water is not polluted with parts of the shrub. Moreover, people should educate themselves on the impacts of oleander on animal health. In addition, farm labourers should be advised to avoid mixing oleander with hay, pastureage, or any other feeds.

It is always advisable to call a veterinarian if there is a likelihood of animal exposure to oleander or there are reports of sudden animal death. Particular care should be taken while trimming landscape plants or any vegetation along roadways near animal residences.

A note to farmers

Although oleander is an attractive plant, it is extremely dangerous to animals. Inadvertent exposure to this plant is common, particularly when it is mixed with feed. Poisoning can cause severe consequences such as death in cattle and goats.

References

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