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Successful management of thiram poisoning in a non-descript bull

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Abstract

The present case report highlights the successful therapeutic management of thiram poisoning in 10 year non-descript bull presented to Department of Veterinary Clinical Medicine, COVAS, Parbhani with the history of accidental ingestion of thiram. Animal arrived in recumbent state, was profusely salivating and shaking its head. Clinical examination revealed syncope,mydriasis and hypothermia with continuous straining. On the basis of history & clinical observations, the animal was diagnosed with a case of thiram poisoning. The bull was treated with Inj. atropine sulphate@0.4mg/kg body weightI/ M, Inj. chlorphenaramine maleate @1mg/ kg body weight, Inj. Frusemide @ 4 mg/kg body weight, Inj. flunixin meglumine @ 2.2 mg/kg body weight I/M and intravenous fluid therapy comprising of Inj. dextrose 5% @ 3000 ml, Inj. ringers lactate @ 2000 ml (I/V) along with Inj. sodium bicarbonate 100 ml. The supportive treatment was continued for 3 days. The bull showed gradual recovery within 6-8 hours of treatment and completely recovered after 3 days of treatment.

Key words: Thiram,Poisoning, Hypothermia,Salivation, Atropine sulphate

Thiram is a tetetramethylthiuram disulphide used as fungicide, seed protectant & animal repellent. It is toxic by ingestion as well as inhalation (Hasan, 2010). It causes anorexia, listless behaviour, dyspnea, convulsions & death due to cardiac arrest and liver enlargement, degenerative changes & focal necrosis (Hasegawa *et al*., 1988). Repeated oral administration of thiram in rat has been observed to cause testicular toxicity with morphological and biochemical changes (Mishra *et al*., 1998). Thiram is metabolized in the body to toxic metabolites dimethyldithiocarbamate and Carbon disulfide, known of inhibiting hepatic microsomal enzymes (Dalviand Deoras, 1986). Exposure to thiram coated seeds delayedegg laying, reduced clutch size and affect egg size and egg shell thickness in partridges(Antia *et al*., 2015).Thiram dust is moderately irritating to the human eyes, respiratory mucous membranes and skin. Thiram poisoning is an important condition at field level, seldom reported from India particularly in Maharashtra. Present case report depicts the thiram poisoning in a non-descript bull.

Case History and Observations

A 10 year non-descript bull was presented to the department with the history of ingestion of thiram approximately 8 hours before,showing clinical signs of hypersalivation, congested mucous membranes, head shaking, syncope and mydriasis (Figure 1). The clinical examination revealed low temperature (98.^{0}F) i.e. hypothermia with continues straining. The bull was in recumbent position. On the basis of history i.e accidental ingestion of thiram and clinical signs the animal was diagnosed as a thiram poisoning case.

Treatment and Discussion

The bull was treated with Inj. atropine sulphate @ 0.4mg/kg body weight (I/M), Inj. chlorphenaramine maleate @ 1mg/kg body weight, Inj. Frusemide @ 4mg/kg body weight, Inj. flunixin meglumine @ 2.2 mg/kg body weight I/M and intravenous fluid therapy comprising of dextrose 5% @ 3000 ml, ringers lactate @ 2000 ml along with 100 ml sodium bicarbonate. The supportive treatment was continued for 3 days. The bull showed gradual recovery within 6-8 hours of treatment and completely recovered after 3 days of treatment (Figure 2).

The fungicides used in food processing and storage range from less toxic to more lethal compounds to animals, and usually poisoning in animals is uncommon as most often farmers abide by the guidelines of use. However, fungicides frequently used may lead to major hazards to animals due to accidents or carelessness, or sometimes deliberate misuse (Gupta and Aggarwal, 2007; Oruc *et al*., 2009). For these reasons fungicide poisoning in various species such as systemic poisoning in sheep (Garcia-Fernández *et al*., 1996; Oruc *et al*., 2009), poultry (Guitart *et al*., 1999), and also in humans

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Figure 1: Animal showing mydriasis

Figure 2: Animal recovered after treatment

(Kintz *et al*., 1997; Calvert *et al*., 2008; Mortazavi and Jafari-Javid, 2009) have been reported in the literature. Fungicide poisoning has been reported frequently from France mainly affecting cattle, dogs and cats (Lorgue *et al*., 1996; Barbier, 2005); from Greece and Italy (Berny *et al*., 2009; Caloni *et al*., 2004). Also animal susceptibility can vary, such as some fungicides e.g., copper sulphate, thiram, chlorothalonil and captan were found more toxic to fish (Lorgue *et al.,* 1996; Tomlin, 2000), and bees (Hartley and Kidd, 1983) and poisoning by mercurial fungicides were reported in wild birds (pigeons, pheasants) (Bartik, 1981). The mechanism of action and metabolic clearance has been specific for different types of fungicide and they have been observed to cause reproductive, carcinogenic, mutagenic and teratogenic effects (Hayes and Laws, 1990). No specific reports were available online on thiram poisoning in a bull and its management, so we treated this rare case of thiram poisoning. As there were very less reports of thiram poisoning, the history by owner played important role for diagnosis of the poisoning. Fluid therapy was given to remove the absorbed toxins from the body of animal and other supportive treatment proved successful.

Conclusions

The bull showed gradual recovery within 6-8 hours of treatment and showed complete recovery after 3 days of treatment. This paper puts on record successful management of thiram poisoning in a non-descript bull.

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