

# Therapeutic Management of Paracetamol Toxicity in Dogs: A Study of Six Cases

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The analgesics and antipyretics such as paracetamol, ibuprofen and aspirin are mostly used medication in human being, paracetamol shows less side effects like less gastric irritation and bleeding (Khan, 1995). Due to its easy availability and non-narcotic nature people keep them in houses and consume without any advice of experts, whenever needed, and also use for their pets. Sometimes the pets specially dogs and cats also ingest accidentally these medications. The reports of paracetamol toxicity especially in dogs are meager. This paper presents toxicity of paracetamol in dogs and its successful therapeutic management.

## HISTORY AND CLINICAL OBSERVATIONS

Six dogs aged from 2 months to three and a half years old presented at Veterinary Clinical Complex, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Anand (India) with history of fever, sickness and oral treatment by the owners with Paracetamol tablets for 3 to 5 days at home. The details of case history and symptoms exhibited by these dogs are presented in Table 1, and haemato-biochemical parameters in Table 2.

On the basis of history, clinical signs and haematological parameters, the cases were diagnosed as Paracetamol toxicity.

## TREATMENT AND DISCUSSION

All the dogs were treated with Inj. Normal Saline @ 20 mL/kg, Inj. Ceftriaxone and Tazobactam @ 15 mg/kg, Inj. B-Complex @ 0.5 mL, Inj. Ranitidine @ 0.5 mg/kg for three days along with oral liver tonics as a hepatoprotectants and haematics in anaemic cases, till recovery. All the dogs presented subsequently were found to be normal, except case 1 and 6, which died on day 2<sup>nd</sup> and 3<sup>rd</sup>, respectively.

In the cases presented, most common clinical signs were vomiting, anorexia, anaemia and haematuria in most cases, while fits and edema on left hind limb were observed in one case each. Almost similar symptoms were also observed by Schlesinger (1995) and MacNaughton (2003). The anaemia was recorded in cases 1, 2 and 6, while very high WBCs counts were found in cases 1, 2, 5, 6. The SGOT-SGPT and serum creatinine values of all the cases were within normal limits, except in case 1

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where SGOT and serum creatinine were found more than 3-fold increased. In dogs, clinical signs of acetaminophen toxicity are generally seen with doses in excess of 200 mg/kg BW (Villar and Buck, 1998). The anaemia might be due to formation of methemoglobinemia secondary to hepatic damage. Paracetamol in therapeutic dose rarely causes adverse reactions, though it may produce methaemoglobinaemia in abnormally high dosage. In most species, acetaminophen is metabolized predominantly by sulfation and glucuronidation in the liver followed by renal excretion of the nontoxic metabolites. The cytotoxic metabolite, N-acetylbenzoquinoneimine, may bind liver proteins and cause centrilobular necrosis. Likewise, a free radical may form through the MFO system and cause oxidative damage to cellular molecules, such as haemoglobin, forming methemoglobin (MacNaughton, 2003). Methemoglobinaemia is a potentially fatal condition, mainly acquired after intoxication by certain drugs (Queiros *et al.*, 2017). Dogs and cats primarily develop methemoglobinaemia and haemolytic anaemia with clinical signs of cyanosis, dyspnea, facial edema, depression and vomiting occurring at 2-4 h post-intoxication (Parkinson, 1996). In the presented cases mostly all dogs recovered well, except two dogs which died might be due to septicemia along with toxicity of paracetamol. The owners of the pets must take care, while using the human medicines for their pets and must consult veterinarians to avoid such toxicities.

**Table 1:** Details of Paracetamol toxicity cases in dogs

Case No.	Age	Sex	Breed	History	Clinical Symptoms
1	5 months	Male	Labrador	Owner gave paracetamol tablet 250 mg for 5 days BID	Vomition, haematuria, salivation, anaemia and restlessness. Recta Temp. 103.5°F Dog presented in lateral recumbency
2	2.5 months	Female	Saint Bernard	Paracetamol 250 mg half tablet for 3 days -BID	Dullness, anorexia, vomition and fits. Recta Temp. 101.2°F
3	5 months	Male	Non-descript	Owner gave paracetamol tablet 250 mg for 4 days BID	Vomition, anorexia, restlessness. Recta Temp. 100°F
4	5 months	Female	Golden Retriever	Owner gave paracetamol tablet 250 mg for 5 days BID	Salivation, restlessness, diarrhoea and anorexia. Recta Temp. 100.8°F
5	8 moths	Male	Labrador	Owner gave paracetamol tablet 500 mg for 5 days BID	Edema on left hind limb
6	3.5 years	Male	Labrador	Owner gave paracetamol tablet 500 mg for 3 days	Anemia, haematuria and anorexia. Recta Temp. 104.2°F Dog presented in lateral recumbency

**Table 2:** Haemato-biochemical parameters of the canine toxicity cases

Parameters	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Haemoglobin (g/dL)	6.3	7.6	11.9	13.9	14.3	6.1
Total WBCs ( $\times 10^3/\mu\text{L}$ )	67.4	21.6	10.6	9.0	15.1	38.1
Total RBCs ( $\times 10^6/\mu\text{L}$ )	2.25	4.03	6.7	6.3	6.83	2.25
Neutrophil (%)	31.0	65.3	62.6	67.1	-	69.8
Lymphocyte (%)	69.0	29.7	28.4	25.4	45.0	24.7
Total platelet ( $\times 10^5/\mu\text{L}$ )	1.99	1.70	1.90	1.91	2.34	1.17
Serum creatinine (mg/dL)	5.0	1.5	1.2	1.4	1.6	-
SGPT (IU/L)	47.6	38	36	35	37.1	-
SGOT (IU/L)	121	36	37	34	36.0	-

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