

COMPARATIVE STUDIES ON MINERAL STATUS AND HAEMOGRAM OF DAIRY BUFFALOES AND CATTLE IN FLUORIDE-ENDEMIC SOUTH-WEST ZONE OF PUNJAB, INDIA

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SUMMARY: The present study aimed to assess the status of copper, zinc, manganese, molybdenum, iron, iodine, calcium, phosphorus, and magnesium in the blood of fluorotic dairy buffaloes and cattle, in villages in the districts of Mansa and Fazilka, in the fluoride-endemic south-west zone of Punjab. Buffaloes (n=128) and cattle (n=28) showing signs of dental lesions or lameness, from villages with water fluoride concentrations more than 1 ppm, were selected as the study group, while buffaloes (n=179) and cattle (n=101) with no clinical signs, from villages with water fluoride concentrations less than 1 ppm, served as controls. Blood samples were collected from both groups and analysed for minerals and haematological indices. Significantly higher plasma fluoride concentrations ($p<0.05$) were observed in the animals from the fluorotic region compared to the healthy control animals. The concentrations of plasma calcium and copper in buffaloes and of zinc in cattle of the hydrofluorotic regions were significantly lower ($p<0.05$). Plasma inorganic phosphorus concentrations in buffaloes and molybdenum concentrations in cattle were significantly higher ($p<0.05$) in the hydrofluorotic region. Plasma magnesium, manganese, iron, iodine, and haematological indices (Hb, PCV, TEC) did not differ between the two groups. The study thus found a decrease in certain essential minerals (calcium, copper, and zinc) in animals in the fluoride-endemic region and these changes may contribute to the toxic effects associated with exposure to excess fluoride.

Keywords: Buffaloes; Calcium; Cattle; Copper; Fluoride; Haematological indices; Hydrofluorotic area; Iodine; Iron; Magnesium; Manganese; Minerals; Molybdenum; Phosphorus; Punjab; Zinc.

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