



Tropentag, October 7-9, 2008, Hohenheim

“Competition for Resources in a Changing World:
New Drive for Rural Development”

Effects of Different Weaning Protocols on the Immune Function in Buffalo Calves and Prophylactic Application of Levamisol[®]

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Abstract

A total of 60 buffalo calves of either sex aged 3 months, were used in this study. Total contingent was divided into three groups viz., treated, placebo and untreated comprising of 10 calves (5 male and 5 female) for each type of weaning protocol. Blood samples were collected 2 and 1 day before and 1 and 14 day after weaning in all groups. Levamisol[®] was given orally two days before weaning after collection of first blood sample.

Statistical analysis revealed that gradual weaning method did not affect any of the parameters. Contrary to the gradual method, abrupt weaning method affected seven parameters namely, PCV, Hb conc., RBC, leukocytes, lymphocytes, neutrophils, and eosinophils. These parameters however, turned to normal by the day +14. The values of leukocytes, neutrophils, red blood cells, Hb conc., PCV, rose on day 1 after weaning, while the percentages of eosinophils, lymphocytes ($p < 0.05$) decreased one day following weaning. These parameters returned to preweaning values on day 14 postweaning. Three hematological parameters namely, Hb conc., RBC and TLC differed because of sex. Males showed higher hemoglobin concentration whereas RBC and TLC were found higher in females. Levamisol[®] treated buffalo-calves presented higher PCV, RBC and leukocytes.

Abrupt weaning protocol affected significantly ($p < 0.05$) six parameters including 4 metabolites (AP, activity of γ -GT and concentrations of cholesterol and triglycerides) and 2 electrolytes (Na and Cl). The values of activity of gamma-GT and concentrations of cholesterol, Na and Cl rose on day 1 after weaning, while serum concentration of triglycerides decreased one day following abrupt weaning. These parameters returned to preweaning values on day +14 postweaning except serum cholesterol, which declined to a significantly ($p < 0.05$) lower level on day 14 postweaning than preweaning value. Serum AP declined markedly on 14 day after weaning. Sex made significant effect only on cholesterol concentration among all serum biochemical parameters. Abrupt weaning caused an acute rise in serum conc. of cortisol, triiodothyronine (T3) and thyroxin (T4) in buffalo-calves on day 1 postweaning. Females presented higher values of serum cortisol and triiodothyronine as compared with preweaning values. Immune measures lymphocyte stimulation assay and Ig-A remained unaltered throughout study.

Keywords: Buffaloes-calves, haematology, hormones, weaning