# Clinico-pathology, hematology, and biochemistry responses toward Pasteurella multocida type B: 2 via oral and subcutaneous route of infections


## ABSTRACT

Background: Pasteurella multocida a Gram-negative bacterium has been identified as the causative agent of many economically important diseases in a wide range of hosts. Hemorrhagic septicemia is a disease caused by P. multocida serotype B:2 and E:2. The organism causes acute, a highly fatal septicemic disease with high morbidity and mortality in cattle and more susceptible in buffaloes. Therefore, the aim of this study was to investigate the clinical signs, blood parameters, post mortem and histopathology changes caused by P. multocida Type B:2 infections initiated through the oral and subcutaneous routes. Methods: Nine buffalo heifers were divided equally into 3 treatment groups. Group 1 was inoculated orally with 10 ml of phosphate buffer saline; Groups 2 and 3 were inoculated with 10 ml of 10(12) colony forming unit of P. multocida Type B:2 subcutaneously and orally respectively. Results: There was a significant difference ($p<0.05$) in temperature between the subcutaneous and the control group. The results revealed significant differences ($p<0.05$) in erythrocytes, hemoglobin, packed cell volume, leukocytes, monocytes, and A: G ratio between the subcutaneous and the control group. Furthermore, there were significant differences ($p<0.05$) in leukocytes, band neutrophils, segmented neutrophils, lymphocytes, eosinophils, basophils, thrombocytes, plasma protein, icterus index, gamma glutamyl tranferase and A: G ratio between the oral and the control group. The post mortem lesions of the subcutaneous group buffaloes showed generalized hyperemia, congestion and hemorrhage of the immune organs, gastro-intestinal tract organs and vital organs. The oral group buffaloes showed mild lesions in the lung and liver. Histologically, there were significant differences ($p<0.05$) in hemorrhage and congestion; necrosis and degeneration; inflammatory cells infiltration; and edema in between the groups. Conclusion: This study was a proof that oral route infection of P. multocida Type B:2 can be used to stimulate host cell responses where oral vaccine through feed can be developed in the near future.



**Keyword**: Pasteurella multocida Type B:2; Buffalo heifers; Clinico-pathology; Hematology and biochemistry responses; Oral route; Subcutaneous route