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***Salmonella* Infection in Calves: Virulence Proteins and its Immunogenic Properties**

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Abstract

Faecal samples collected from calves suffering from diarrhoea revealed the isolation of *Salmonella* in 17.5% of the cases, while in the contact apparently healthy calves the incidence was 3.4%. Four *Salmonella* serovars were elucidated namely, *S. typhimurium* (7.3% and 1.7%), *S. dublin* (5.1% and 0.8%), *S. enteritidis* (2.9% and 0.8%) and *S. anatum* (2.2% and 0%) from diarrhoic and apparently healthy calves respectively. SDS-electrophoretic analysis of the outer membrane protein (OMP) revealed common antigen protein bands especially between *S. dublin* and *S. enteritidis*, due to the greater similarity in their antigen structure. All serovars showed intense protein bands in the range from 20K to 45K. In the Western blot analysis, serum antibodies from calves infected with *S. typhimurium* (serogroup B) reacted with protein bands at the range of 17K, 24K, and 31K. The OMP of the two serovars *S. dublin* and *S. enteritidis* (both serogroup D1) reacted relatively similar in Western blot with the antisera collected from calves infected with their corresponding serovars. Two protein bands were characteristic for *S. dublin* and *S. enteritidis*, 14.4K and 24K. Only one protein band, 24K from the blotted OMP of *S. anatum* (serogroup E1) reacted with serum from infected calves infected with that serovar. Using the heterologous serum in the Western blot analysis gave weaker results than the homologous serum.

ELISA results detected the presence of serovar specific antibodies, *S. typhimurium* ELISA detected 10.9% and 4.3%, *S. dublin* ELISA detected 7.3% and 2.6%, *S. enteritidis* ELISA detected 5.1% and 1.7%, while *S. anatum* ELISA detected 2.9% and 0.9% of the serum samples collected from diarrhoic and apparently healthy calves respectively. It could be concluded that *Salmonella* OMP were major immunogenic antigens that could be used in ELISA or Western blot to detect and monitor *Salmonella* infection in calves.

Keywords: Calves, ELISA, outer membrane proteins, *Salmonella*, Western blot