

Susceptibility of calves to challenge with *Salmonella typhimurium* 4/74 and derivatives harbouring mutations in *htrA* or *purE*

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Salmonella typhimurium 4/74 is highly virulent for cattle after oral challenge, causing severe diarrhoea, which is sometimes associated with systemic spread of the micro-organism. Although susceptible to oral challenge, groups of cattle were found to be relatively resistant to subcutaneous challenge with this strain. The virulence of *S. typhimurium* 4/74 harbouring mutations in *htrA* and *purE* was also assessed in cattle. Although *S. typhimurium* 4/74 *htrA* and *purE* are attenuated following oral challenge in mice, cattle were highly susceptible to oral challenge with these mutants. As with the parent *S. typhimurium* 4/74 strain, cattle exhibited greater susceptibility to oral compared to subcutaneous challenge with *S. typhimurium htrA* and *purE* mutants. Following subcutaneous challenge with sublethal levels of *S. typhimurium* 4/74, calves produced significant levels of antibodies to *S. typhimurium* soluble extract. No correlation was detected between interferon gamma levels in sera and susceptibility to infection by any route. The concentrations of the acute-phase-associated protein haptoglobin were increased in the sera of five of six cattle inoculated subcutaneously, although increases in concentration were smaller in cattle inoculated orally.

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