

TITLE: CELL INVASION, INTRA MACROPHAGE SURVIVAL AND FREQUENCY OF THE *ST313-TD* GENE IN *SALMONELLA* DUBLIN STRAINS ISOLATED IN BRAZIL.

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ABSTRACT:

Salmonella Dublin is a strongly adapted serovar that usually causes enteritis and/or systemic diseases in cattle with high levels of mortality. However, it can be isolated from humans, causing a severe disease that can be even fatal. Differently than *S. Dublin*, bloodstream infections caused by other non-typhoidal *Salmonella* serovars are not common. However, in Sub-Saharan Africa, *Salmonella* Typhimurium strains from ST 313 are among the most common pathogens related to these infections. Interestingly, a possible virulence marker in the ST 313 strains, the gene *st313-td*, is not present in the strains of *S. Typhimurium* from other STs, but it is widely distributed in *S. Dublin* strains. The aims of this study were to verify the frequency of the *st313-td* gene by PCR, to verify the epithelial cell invasion capacity and the intra macrophage survival of *S. Dublin* strains isolated in Brazil. For this, 113 *S. Dublin* strains isolated from humans (83) and animals (30) in Brazil between 1983 and 2013 were studied. All the strains studied presented the *st-313td* gene. Among the positive strains, 20 were selected for the Caco-2 cell invasion and for the human intra macrophage survival (U937) assays. The invasion rate to Caco-2 cells varied from 53.97 to 88.88% in comparison to the initial inoculum. Moreover, the strains presented an intra macrophage survival rate from 72.90 to 98.08% in comparison to the initial inoculum. These results may suggest that the constant distribution of the *st313-td* gene among the *Salmonella* Dublin strains studied might have been essential for this serovar to be able to cause invasive disease in humans and bovines in Brazil. In addition, the strains presented high invasion and survival rates in human cells, confirming its capacity of causing invasive disease in humans.

KEYWORDS: frequency of the *st313-td* gene, intra macrophage survival, invasion to Caco-2 cell, *Salmonella* Dublin.

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