

1.7. Objectives of the study

The general objective of the present study was to evaluate the immunological effects of the probiotic *Enterococcus faecium* SF68 (NCIMB 10415) in piglets by assessing the effects *in vivo* and *in vitro* in the context of bacterial and viral infections.

The specific objectives of the *in vivo* study were:

1. To compare the percentages of CD4+ lymphocytes (in the spleen and the discrete Peyer's patch) and CD8+ lymphocytes (in the intraepithelial lymphocyte of the jejunum) of piglets that were receiving the probiotic supplements and those that were not, while piglets of both groups were infected with *Salmonella typhimurium* DT 104, using FACS analysis.
2. To assess the effect of the probiotic supplement on the gene expression levels of various cytokines/chemokines and receptors in the PBMC and distal PP of piglets of both groups using real-time PCR.

The specific objectives of the *in vitro* study were:

1. To characterize two previously isolated pig intestinal cells and establish a pig intestinal epithelial cell model for studies on transmissible gastroenteritis virus (TGEV)
2. To evaluate the anti-viral activities of the probiotic, *E. faecium* SF68, with regards to its potential to decrease viral-infectivity, viral titer and virus-induced cytokines, using pig intestinal epithelial cells during TGEV infection.