P4.83 - ASSESSING THE ABILITY OF *LACTOBACILLUS* STRAINS TO COUNTERACT ENTEROTOXIGENIC *ESCHERICHIA COLI* (ETEC) INFECTION BY USING A *GALLERIA MELLONELLA IN VIVO* MODEL

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ABSTRACT

Enteric colibacillosis is a common disease in weanling pigs, with postweaning diarrhea (PWD) as the main symptom in piglets. It is caused by the colonization of the small intestine by enterotoxigenic strains of *Escherichia coli* (ETEC). Of the control strategies, antibiotics and zinc oxide have been the most effective in reducing the economic losses caused by PWD. However, concerns about antibiotic resistance have led to restrictions on the use of critically important antimicrobials in food-producing animals, and in June 2021 zinc oxide was banned in the European Union due to the environmental risks it poses. As a result, efforts are underway to develop more environmentally friendly alternatives to combat ETEC infections, such as probiotics.

In this study, we evaluated the ability of three potential probiotics (*Lactobacillus gasseri, L. acidophilus* and *L. reuteri*) to reduce the ETEC infection by using a *Galleria mellonella in vivo* model in 2 different perspectives: co-infection (i.e. *Lactobacillus* + ETEC); and prophylactic strategy (i.e. prior infection with *Lactobacillus* for 4 h followed by ETEC infection). Survival rate and health index scores of *G. mellonella* were assessed at 24, 48, and 72 h post-infection. In addition, real-time PCR was also performed to determine the transcript levels of genes encoding the *G. mellonella* antimicrobial peptides to infer the immune response to ETEC infection.

Our results suggest that a co-infection strategy was not effective in controlling ETEC infection. On the other hand, when a prophylactic strategy was used, we observed significant differences between the treated larvae and the control. Overall, we observed that *L. acidophilus* was able to reduce ETEC strain SP11 infection. Differences in the expression of antimicrobial peptides were also found when comparing treated and control conditions. In conclusion, specific *Lactobacillus* species seem to have the potential to protect against ETEC infection.

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