



4 Research paper

Lactobacillus plantarum S27 from chicken faeces as a potential probiotic to replace antibiotics: in vivo evidence by Benbara, T., Lalouche, S., Drider, D., and F. Bendali
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in **Significant Impact Group(s)**: Specific alternatives \ Pre-

/probiotics

Species targeted: Poultry;

Age: Not stated;

Outcome Parameter(s): Improved production; lower disease susceptibility

Summary: A *Lactobacillus plantarum* strain was isolated from chicken faeces and assessed for its probiotic use. The administration of *L. plantarum* S27 to each chick daily by gavage, for 31 days, permitted to improve the animal food intake and weight. Supplementation of *L. plantarum* S27 resulted in increased live body weight since the 4th week, compared to chickens from group 1 (preventive antibiotic treatment with erythromycin) and group 2 (control group without treatment). Remarkably, weights of carcasses, heart and gizzard from the probiotic treated group 3 were significantly higher. In vitro and in vivo analyses indicated that *L. plantarum* S27 is a potential probiotic for chickens as alternative to antibiotics in animals feeding. This study underlines the richness of chicken digestive tract as source for probiotic strains.

This study underlines the richness of the chicken digestive tract as a source for potential probiotic strains. However, it is important to assess these probiotic properties first by extensive in vitro analyses such as gastric acidity (pH 0.5, 1, 1.5, 2 and 2.5), tolerance to bile salts, adherence to broiler intestinal cells and antibacterial activity. Out of the strains isolated, only a few potentially interesting strains remain which fulfilled the probiotics criteria selection and expressed antibacterial activities against the enteric avian pathogens, such as *E. coli* and *S. enterica*, which are frequently encountered during poultry production. One selected *Lactobacillus plantarum* strain was subsequently tested for susceptibility to antibiotics and adhesion to poultry intestinal cells to ascertain its probiotic attributes. Finally an in vivo experiment with chicks was set up with this selected *Lactobacillus plantarum* which proved its potential interesting probiotic properties such as reducing the amount of Enterobacteriaceae (as indicator bacteria of avian pathogens) in the intestine, and increased weight gain. Taken all together, the data from this study support an application of this strain as a future probiotic to be applied during food-animal production as replacement of in feed antibiotics.

4 Research paper - Benbara - 2020 - *Lactobacillus plantarum* S27 from chicken faeces as a potential probiotic to replace antibiotics_in vivo evidence

Where to find the original material:

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