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Probiotics for animal protection

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Abstract :

To find innovative and sustainable solutions to problems linked to animal and human health, as well as the preservation of agricultural resources, a "One Health" approach is being adopted. This approach is supported by the Urbane programme funded by the European Commission, which includes my thesis project on the effectiveness of probiotics in protecting farm animals. The main aim of my research is to develop new probiotics for poultry applications. To achieve this, microbial strains are isolated from matrices native to Africa, then identified using 16S rRNA gene sequencing and confirmed by Maldi ToF-Mass Spectrometry identification. More than hundred strains (lactic acid bacteria, *Bacillus* and some yeasts) are identified and characterized based on criteria defined by the FAO. These criteria inclued the study their viability in acid conditions, their surface hydrophobicity, their self-aggregation capacity, their ability to express antagonistic activity towards certain pathogens and their ability to colonise the gastrointestinal tract. Five strains of lactic acid bacteria tested (*Lactobacillus plantarum, Leuconostoc mesenteroides, Enterococcus durans* and *Lactobacillus casei*) inhibit the growth of pathogens such as *Bacillus cereus*, *Staphylococcus epidermidis* and *Escherichia coli*. These lactic acid bacteria strains produce a variety of compound such as emusifying agents, short chain fatty acid and have a spectacular capacity for self-aggregation. These properties help the colonisation of intestinal mucosa by probiotic by preventing the attachment of pathogens, and hence competition for attachment sites. These strains need to be studied in greater depth in order to gain a better understanding of the beneficial effects observed in each strain and to develop in vivo applications, particularly in agriculture.

Keywords : Probiotics; One; Health; Poultry.