

Probiotic Potential and Antimicrobial Activity of *Enterococcus faecium* Isolated from Chicken Caecal and Fecal Samples

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Abstract : Enterococci are important inhabitants of the animal intestine and are widely used in probiotic products. A probiotic strain is expected to possess several desirable properties in order to exert beneficial effects. Therefore, the objective of this study was to isolate and characterize strains of *Enterococcus* sp. from chicken cecal and fecal samples to determine potential probiotic properties. Enterococci were isolated from thirty one chicken cecal and fecal samples collected from a local farm. In vitro studies were performed to assess antibacterial activity (using agar well diffusion and cell free supernatant broth technique against *Salmonella enterica* serotype Enteritidis), susceptibility to antibiotics (amoxycillin, cotrimoxazole, chloramphenicol, cefuroxime, ceftriaxone, ciprofloxacin, and nalidixic acid), survival in acidic conditions, resistance to bile salts, and their survival during simulated gastric juice conditions at pH 2.5. Isolates were identified using biochemical and molecular assays (API 50 CHL, and API ZYM kits followed by 16S rDNA gene sequence analysis). Two strains were identified, of which, *Enterococcus faecium* was capable of inhibiting the growth of *S. enteritidis* and was susceptible to a wide range of antibiotics. In addition, the isolated strain exhibited significant resistance under highly acidic conditions (pH=2.5) for 8 hours and survived well in bile salt at 0.2% for 24 hours and showing ability to survive in the presence of simulated gastric juice at pH 2.5. Based on these results, the *E. faecium* isolate fulfills some of the criteria to be considered as a probiotic strain and therefore, could be used as a feed additive with good potential for controlling *S. enteritidis* in chickens. However, in vivo studies are needed to determine the safety of the strain.

Keywords : acid tolerance, antimicrobial activity, *Enterococcus faecium*, probiotic

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020