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Screening of Purine Nucleosides Degrading Probiotic Lactic Acid Bacteria as a Novel Approach in Management of Hyperuricemia

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Out of 20 different curd and fecal samples, 76 Gram positive and catalase negative rods were isolated and screened for purine nucleoside degradation ability. A HPLC device equipped with a Photo diode array (PDA) detector was used to evaluate the ability of these isolates to degrade inosine and guanosine, the two key intermediates in purine metabolism by incubating these isolates with inosine-guanosine solution (1.25mM) for 2 h at 37°C. Contents of remaining inosine and guanosine were identified at 254 nm by retention time of 7.48 and 6.46 min, respectively, and quantified by interpolation of calibration curves. To evaluate the degradation of purine compounds by cell-free extracts of LAB, the cells were sonicated for 30'X3 (pulse rate- 5sec on/ 5 sec off) and activity evaluated through HPLC. Eleven isolates *viz*. D3A, D1AB, D1F, D3E, D6F, D2A, D5F, D3D, D3B, D1AC, D1AA were screened as positive for purine nucleoside degradation ability. These organisms were then evaluated for their potential probiotic attributes. Out of these 11 isolates only six isolates *viz.* D3A, D1AB, D2A, D6F, D5F and D1AA were found to be most acid tolerant and selected for further in vitro evaluation. When tested for bile tolerance only three isolates *viz*. D6f, D5F, D1AA and D3A were found to resist 2% bile and showed highest viability among the tested six strains. Further evaluation of the isolate for antimicrobial activity showed that the all the screened four isolates showed a good antimicrobial activity against Gram positive bacteria *viz. Enterococcus faecalis, Bacillus subtilis, Staphylococcus aureus, Micrococcus luteus* and other Lactobacillus species. Our work shows that our isolates apart from purine degradation are good probiotics as proved by their acid and bile tolerance. Also, the antimicrobial activity showed by the isolate can give an added advantage to the isolate to compete and survive in the GI tract.

Biography:

Dr. Neha Pandey is working as DST Women Scientist-A in Dairy Microbiology (DM) Division in National Dairy Research Institute (NDRI), Karnal, Haryana, India since 24th June 2016 under the mentorship of Dr. Shilpa Vij (Principal Scientist, NDRI, Karnal). She has completed her Ph.D in Dairy Microbiology from NDRI Karnal in 2013 and has eight publications in journals of national and international repute. For carrying out present study the authors highly acknowledge the funds received from Department of Science and Technology (DST), India.