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Probiotic Potential of Lactic Acid Bacteria Isolates from Indigenous Calves is Superior to Isolates from Crossbred Dairy Calves

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ABSTRACT

Gupta, M., Pattanaik, A.K., Singh, A., Sharma, S., Jadhav, S.E. and Verma, A.K. 2020. Probiotic potential of lactic acid bacteria isolates from indigenous calves is superior to isolates from crossbred dairy calves. *Animal Nutrition and Feed Technology*, 20: 201-216.

To investigate the effect of host genetics on gut microbiota probiotic potential, we performed a comparative study between the probiotic attributes of the Lactobacilli isolated from the faeces of indigenous (Tharparkar) as well as crossbred (Vrindavani) cattle. Accordingly, 69 lactic acid bacteria (LAB) strains were isolated from faeces of new-born calves (40 from Tharparkar and 29 from Vrindavani), out of which 4 strains from each breed having auto-aggregation >40%, and cell surface hydrophobicity >70% were short-listed. The auto-aggregation and cell surface hydrophobicity values were significantly ($P<0.05$) higher in indigenous isolates compared to crossbred isolates. Additionally, indigenous isolates showed an optimal ability to ferment esculin. The salt ($P=0.064$) and bile ($P=0.086$) tolerance abilities tended to be higher along with a higher ($P<0.05$) phenol tolerance in indigenous isolates vis-à-vis crossbred isolates. The isolates from both the genetic groups were found susceptible to all the tested antibiotics except for vancomycin. Also, they showed a moderate tendency ($P>0.05$) to form biofilm and had comparable ($P>0.05$) antagonistic activity. Further assessments indicated that the per cent co-aggregation was significantly ($P<0.05$) higher in isolates from indigenous compared to that from the crossbred cattle. Thus, it can be concluded that LAB isolates from the indigenous Tharparkar cattle are superior over the isolates from crossbred cattle in terms of their *in vitro* probiotic efficacy.

Keywords: Calf, Faecal-origin, Lactobacilli, Probiotic, Tharparkar, Vrindavani

INTRODUCTION

The gut is the largest immune organ in the body which is predominantly occupied by bacteria that plays a vital role not only for accretion of nutrients but also for health. The composition of the gut microbiota varies depending on the host-

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