

Study of probiotic Lactobacillus in fermented whey as Biotherapeutic against enteric pathogen

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ABSTRACT

In the following study, the probiotic prospective of Lactobacillus spp. was combined with whey, a dairy by-product to maximize the therapeutic output. At the frontier of an innovative idea, the procedure was adapted for in vivo studies as better biological alternative to pharmaceutical interventions to treat diarrhoea.

Experiment:

Two fermented whey products were standardised with probiotic cultures, Lactobacillus paracasei NCDC 17 and Lactobacillus casei NCDC 299. Swiss Albino mice were approved with two control groups and infected with cells of Shigella dysenteriae strain. The probiotic fermented whey was orally started after the onset of symptoms.

Results:

On 6th day, there was a sharp increment in total fecal LAB count in group Lactobacillus 17 and 299 i.e. (8.229±0.07) and (8.399±0.181) respectively. On 4th day, shedding of coliforms was less than 5 log cycle in Lactobacillus group and high in control i.e. 7.5 log cfu/g. Colonisation of aerobic bacteria in small intestine was higher in Lactobacillus group (6.77±0.25). Colonisation of pathogen in small intestine was found to be minimum (2 log cfu/ml) from the day 7. Colonisation of aerobic bacteria in large intestine was very high (6.6 log cfu/ml) in Lactobacillus group. Probiotic strains result in short chain fatty acid (SCFA) production in whey, which induces a lowering of the intestinal pH and subsequent inhibitory effect on Shigella sp. Concentration of un-dissociated lactic acid in the intestinal segments was approx. 5mM; adequate for the inhibition of pathogen growth. Findings indicated that anti-Shigella antibodies (IgA) in the intestinal lumen were high in both fermented whey groups which facilitated the clearing of pathogen from the gut.

Conclusion and Significance:

Whey as a medium increases the growth and survival of probiotic bacteria in human gut by providing buffering property to probiotic culture in gastric and intestinal transit, and fermentation in succession increases and modifies the functional properties of whey to add value.

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Publications

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Biography

Nupur Goyal Kothari is a self-employed freelancer with her expertise in Microbiology. She is PhD from National Dairy Research Institute, India and was affiliated with the Department of Biotechnology, Amity University as an Assistant Professor.

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