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The effect of digestive enzyme inhibitory *Lactobacilli* on postprandial hyperglycemia (PPG) in diabetic rats

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Control of PPG in early stages has the potential for the treatment of diabetes. Digestive enzyme inhibitors had recently taken of the foremost attention of scientific community due to their unambiguious action on PPG. Identification and characterization of these inhibitors from natural resources to avoid side effects associated with synthetic drugs have become a common practice in last decade. Enzyme inhibition through some food sources or by food grade microorganism can have a dual advantage of combining nutritional approach with the pharmacological approach. Therefore, the present study was done to evaluate α -glucosidase inhibitory activity of food grade *Lactobacillus* spp. For this 54, α -glucosidase deficient lactobacilli isolates were screened for enzyme inhibition against α -glucosidase. Ten highest enzyme inhibitory isolates includes *Lactobacillus salivarius* (2), *Lactobacillus plantarum* (4), *Lactobacillus fermentum* (3) and *Lactobacillus casei* (1). After affirming their probiotic attributes *Lactobacillus plantarum* HAF 109 was further tested for control of PPG in sucrose loaded diabetic rat model. Feeding of probiotic fermented milk attenuated PPG levels by 17.2%, 28.2% and 41.3% at 0th day, 4th and 9th week in comparison to 8.5%, 21.2% and 62.3% of acarbose. The mechanism by which these results evolved are proposed to be a consequence of probiotic fermented milk inhibiting the metabolism of carbohydrates by the inhibition of brush border α -glucosidase in the small intestine, similar to that of acarbose. Nevertheless, the *in vivo* results suggest that the probiotic-fermented milk may exert potential anti-diabetic effect by suppressing PPG levels through the novel inhibition of intestinal α -glucosidase.

Biography

Priti Devi received her B.Sc. and M.Sc. degrees from Kurukshetra University in Haryana, India. Currently, she is studying for a Ph.D. in Dairy Microbiology at National Dairy Research Institute. Her Ph.D. research project is focused on the characterization of α -glucosidase inhibitory probiotic lactobacilli. She has co-authored on 2 publications in international journals including one paper in reputed Applied and Environmental Microbiology (AEM).

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