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Editorial

Traditional Fermented Indian Foods: A Treasure Hunt for Rare Lactic Acid Bacteria

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Diversity of Indian fermented foods is related to incomparable food culture of each community. Various types of Indian ethnic fermented foods and beverages are produced either naturally or by adding mixed starter cultures using traditional or scientific knowledge of food fermentation (Sekar and Mariappan, 2007). In India, particularly in its hilly states, fermented foods are regularly being consumed by the people since ages (Kore et al., 2012). These traditional fermented foods are untapped treasure hunts for rare Lactic Acid Bacteria (LAB) with immense health benefits. LAB play an important role in the traditional fermentation processes by their functional properties such as biopreservation, bioenrichment of nutritional value, bioavailability of minerals, production of antioxidants, antimicrobial activities, and probiotic properties (Akbar et al., 2016; Gautam and Sharma, 2015). Also, it has been shown that LAB may cause anti-allergic effects in the consumers (Ai et al., 2016; Cross and Gill, 2001; Taghavi et al., 2014). Till date, so many rare traditional/local food items have been selected by many researchers around the globe to isolate LAB with novelty; however, many potential LAB are still unexplored. Diverse indigenous Indian foods have also been reported in literature for isolation process of bacteriocin producing LAB. Sepu vari, Dangal Vari, Chur saag, Salori, Nashasta, Chaang (fermented wheat), Chaang (fermented rice) are common local fermented Indian food products. The use of LAB and its antimicrobial compounds is a promising ongoing development in food preservation. So far, many LAB have been isolated from Indian traditional fermented food and beverages, such as *Lactococcus lactis*, *L. brevis*, *L. acidophilus*, *Pediococcus* sp., *L. spicheri*, *L. plantarum*, *L. fermentum*, and *L. curvatus* (Gautam and Sharma, 2009a,b; Gautam and Sharma, 2015). All these reported lactic acid bacteria have tremendous potential to inhibit growth of spoilage causing and food-borne pathogenic bacteria viz., *Listeria monocytogenes*, *Clostridium perfringens*, *C. botulinum*, *Staphylococcus aureus*, *Bacillus cereus*, *L. plantarum*, *Leuconostoc mesenteroides*, *Enterococcus faecalis*, *Salmonella* sp., *Vibrio cholera*, *V. parahaemolyticus*, and *Aeromonas hydophila*. Isolation and screening of lactic acid bacteria from naturally occurring food sources have been proven to be a good source of food grade lactic acid bacteria with probiotic potential and bacteriocin producing capabilities. The use of lactic acid bacteria and its antimicrobial compounds especially bacteriocins is a promising ongoing development in food preservation (Akbar et al., 2016; Gautam and Sharma, 2009a,b). Bacteriocin production has been reported to be affected by several factors, including fermentation conditions, such as pH, temperature, and inoculum size. The increasing of bacteriocin production and improving its activity has economical importance due to reduction of production cost. Beside use of only one of the metabolite i.e. bacteriocin, the use of whole LAB cells (probiotics) have also been established to enhance immunity as well as to cure many ailments in human beings (Sourabh et al.,

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2010). Also, there is a plentiful prospect available for microbiologists to explore the Indian fermented foods for the isolation of new LAB strains for their potential role to improve food quality and control food hazard.

References

Ai C., Ma N., Zhang Q., Wang G., Liu X., Tian F., Chen P., Chen W. (2016). Immunomodulatory effects of different lactic acid bacteria on allergic response and its relationship with *in vitro* properties. *PloS One*. 11: e0164697. [DOI: 10.1371/journal.pone.0164697]

Akbar A., Ali I., Anal A.K. (2016). Industrial perspectives of lactic acid bacteria for biopreservation and food safety. *The Journal of Animal and Plant Sciences*. 26: 938-948.

Cross M.L., Gill H.S. (2001). Can immunoregulatory lactic acid bacteria be used as dietary supplements to limit allergies? *International Archives of Allergy and Immunology*. 125: 112-119. [DOI: 10.1159/000053804]

Gautam N., Sharma N. (2009a). Bacteriocin: safest approach to preserve food products. *Indian Journal of Microbiology*. 49: 204-211. [DOI: 10.1007/s12088-009-0048-3]

Gautam N., Sharma N. (2009b). Purification and characterization of purified bacteriocin of *Lactobacillus brevis* isolated from traditional fermented food of H.P. *Indian Journal of Biochemistry and Biophysics*. 46: 337-341.

Gautam N., Sharma N. (2015). A study on characterization of new bacteriocin produced from a novel strain of *Lactobacillus spicheri* G2 isolated from Gundruk- a fermented vegetable product of North East India. *Journal of Food Science and Technology*. 52: 5808-5816. [DOI: 10.1007/s13197-015-1710-x]

Kore K.B., Pattanaik A.K., Sharma K., Mirajkar P.P. (2012). Effect of feeding traditionally prepared fermented milk dahi (curd) as a probiotics on nutritional status, hindgut health and haematology in dogs. *Indian Journal of Traditional Knowledge*. 11: 35-39.

Sekar S., Mariappan S. (2007). Usage of traditional fermented products by Indian rural folks and IPR. *Indian Journal of Traditional Knowledge*. 6: 111-120.

Sourabh A., Kanwar S.S., Sharma P.N. (2010). Diversity of bacterial probiotics in traditional fermented foods of western Himalayas. *International Journal of Probiotics and Prebiotics*. 5: 193-202.

Taghavi M., Athari S.M., Athayi M., Athayi S., Omidi R., Athari S.S. (2014). Report of a food allergy to wheat gluten. *Bulletin of Environment, Pharmacology and Life Sciences*. 3: 123-125.

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