Lactic acid bacteria (LAB) are becoming very popular in food and dairy industries due to their therapeutic benefits. Some of their health benefits include improvement in intestinal disorders and lactose intolerance, antagonism against various pathogenic organisms, anti-mutagenic and anti-carcinogenic activities. These bacteria are widely used in the production of fermented foods and beverages and contribute to both sensory qualities of the food and the prevention of spoilage. Health promoting benefits of consumption of LAB have been known for several years, since Metchnikoff (1908) first attributed longevity of Bulgarian peasants to consumption of fermented milks. Consumption of live microbial supplements with presumptive health benefits, proven by various clinical studies in humans (Marteau et al., 2001) led to the coining of term ‘PROBIOTICS’.

One widely used definition, developed by the World Health Organization and the Food and Agriculture Organization of the United Nations in 2001, is that probiotics are “live microorganisms, which, when administered in adequate amounts, confer a health benefit on the host.”

Some of the commonly known probiotics belong to the Lactobacilli and Bifidobacterium genera. Among these microorganisms, lactic acid bacteria are regarded as a major group of probiotic bacteria (Du Toit et al., 1998) as these are non-pathogenic, technologically suitable for industrial processes, acid and bile tolerant, adhere to gut epithelial tissue and produce antimicrobial substances, including, organic acids, hydrogen peroxide and bacteriocins (Dunne et al., 2001). They have shown to exert either bacteriostatic or bactericidal activity against several pathogens (Lee et al., 2011). Numerous health benefits of probiotic organisms have been suggested including reduction of blood cholesterol, improvement of immunity, alleviation of symptoms of lactose intolerance, treatment of diarrhea, anticarcinogenic and antihypertensive properties and biotransformation of isoflavone phytoestrogen to improve hormonal balance in postmenopausal women (Toole and Cooney, 2008; Candela et al., 2008; Zago et al., 2011).

Many probiotics are now widely marketed through food products such as yoghurt, fermented milks, fermented juices and freeze dried supplements. The health benefits derived by the consumption of foods containing probiotic bacteria are well documented and more than 100 probiotic products are commercially available worldwide (Shah,
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To observe a positive health effect of their consumption, a minimum level of live microorganisms is required; this level, depending on the strains used and the required health effect, is usually between $10^6$ and $10^{11}$ CFU/g (Vanderhoof and Young, 1998). Therefore, assuming a daily consumption of fermented products of 100 g, they should contain between $10^6$-10$^9$ CFU/g of live bacteria at the time of consumption. Soymilk based yoghurts offer a considerable appeal for a growing segment of consumers with certain dietary and health concerns. It has several nutritional advantages such as high protein, reduced level of cholesterol and saturated fat as well as the absence of lactose (Favaro et al., 2001).

Probiotic microorganisms are able to produce antimicrobial agents (bacteriocins, lactic acid and hydrogen peroxide) against food-borne pathogens so they are widely used as a biopreservatives. The ubiquitous nature of *Listeria monocytogenes* and its ability to grow at refrigerated temperature makes *L. monocytogenes* a significant threat to the safety of ready-to-eat (RTE) meat products (Zhu et al., 2005). Biopreservation with various strains of LAB is a suitable alternative to chemical preservatives (Jacobsen, 2003). The antimicrobial activity of a *Pediococcus*, *Bifidobacteria*, and *Enterococcus, Lactobacillus plantarum* MCS strain against *L. monocytogenes* was observed in naturally and artificially contaminated salami by dipping and spraying (Zhu et al., 2005; Leroy et al., 2003; Allende et al., 2008). Bioprotective microorganisms have already shown its potential for practical application in various foods, such as meat (Vermeiren et al., 2004) and plant derived products (Trias et al., 2008).

However, little effort has been made for isolation, identification and characterization of LAB with probiotic properties from the traditional fermented foods and beverages of Himachal Pradesh. Therefore, it will be worthwhile to study the lactic acid bacteria of indigenous fermented foods and beverages of high altitude regions of Himalayas and explore their probiotic potential.

Keeping above in view, the present research work “**Bioprospecting of traditional fermented foods and beverages of Himachal Pradesh for probiotics**” has been undertaken with the following objectives:

1. Isolation of the LAB isolates from the traditional fermented foods and beverages of Himachal Pradesh.

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3. Selection and characterization of a potential probiotic LAB isolates.

4. Amplification of 16S rDNA of LAB using polymerase chain reaction (PCR).

5. Screening of LAB isolates for inhibitory action against *Listeria monocytogenes*.

6. Evaluation of efficacy of probiotic formulation (whey permeate) for the inhibition of *Listeria monocytogenes* in raw vegetables (lettuce and salads) and meat by dipping method.

7. Preparation of probiotic product.