

Conceptual Editorial

Lactic acid Fermentation of Juices for development of Probiotic beverages

Preservation using lactic acid bacteria is well known from ancient times. It is one of the oldest methods of food preservation in the world. Fermentation using natural or starter culture has emerged to be a cheap method of preservation to increase the shelf-life of the products, besides preparation of new products with diversified taste and flavour. Lactic acid fermentation is used for commercial bulk storage of seasonal vegetables to increase their availability and to obtain a desired sensory quality of products. This process apart from contributing certain desirable physical and flavour characteristics, ensures the availability of product at relatively low cost. If some of these fermented products can be made into food products which are being consumed or are nutritionally or microbiologically more stable, still retaining the advantages of lactic acid fermentation, it would be most appropriate approach. Currently, different researchers are working on different formulations of new functional starter culture of LAB which are industrially important in food safety along with one or more organoleptic, technological, nutritional or health benefits.



Probiotic are viable microorganisms that beneficially affect the host's health by improving its microbial balance. A microorganism is considered probiotic if it is a normal resident of the gastrointestinal tract, survives the passage through the stomach and maintains its viability and activity in the intestine. Probiotics provide a number of health benefits through maintenance of normal intestinal microflora, protection against gastrointestinal pathogens, treatment of lactose intolerance, produce vitamin B and anticarcinogenic activity. Most of the studied probiotic bacteria include different strains of *Lactobacillus* and *Bifidobacteria*. The use of probiotic bacterial culture stimulates the growth of preferred microorganism, crowds out potentially harmful bacteria and reinforces the body natural defense mechanism. Lifestyle and eating habits play an important role in the overall health of individuals. The additions of probiotic microorganism in several foods have been growing as a way to increase their nutritional value. Further, in the coming years food products with probiotic characteristics will dominate the industrial market of functional foods. Presently, most of the probiotics foods dominating the market are from dairy based raw materials. Currently, here we are working on the development of fruit and vegetable based probiotic beverages.

Further, the millet based apple beverage with the combination of pre and probiotics were also made and evaluated for various nutraceutical compounds. To increase the availability of more number of products in the market the research on fruit and vegetable based probiotic drinks is undergoing using microencapsulation technique. Since, microencapsulation of microorganism is one of the latest and efficient methods to protect bacteria against severe environmental factors. The core material is encapsulated in the food grade matrix type coating material. These materials form a barrier to protect the core material against the gastrointestinal environment using the different encapsulation system. It enhances the survival and protection of bacteria in food. Encapsulation is fast, flexible technique and it allows continuous operation, with particle size of 40 μm . The existing technologies for encapsulation on a laboratory scale are effective, still there are several challenges in producing food grade

microencapsulated microorganisms at a large-scale. The significant challenge in cell encapsulation is the size of encapsulated microbial cells. Capsules with larger size impart negative effect on textural and sensory qualities of food products. Hence, selection of appropriate technique and encapsulating materials are other main challenges. Upcoming research also govern the process cost, optimal size of encapsulated cells that offers extreme defense to probiotics while improving the sensory qualities of the product. As now, there are no fruit and vegetable based probiotic products stable at high temperatures, which are available in markets. Since, it is a great challenge to increase the survivability of probiotics during the heat treatment process development of heat stable starter cultures and an encapsulation system could provide benefits to the food industry.

Dr. Somesh Sharma

Associate Professor

Shoolini University of Biotechnology and Management Sciences

Solan (HP), India