Abstract

With the changing life-style and increasing risk of gastrointestinal and other infectious diseases due to the consumption of high-fat food products, people are now-a-days becoming more health conscious and looking for novel food products with reduced fat content. Yoghurt, a fermented milk product with various nutritional properties was prepared with probiotic cultured mango pulp with reduced fat and water chestnut starch as fat replacer as well as biothickener. *L. rhamnosus* (ATCC 7469) is a commercially used beneficial probiotic and was used in this context. The properties of prebiotics have been studied and based on that fructo-oligosaccharide (FOS) and inulin was considered as the prebiotics. Different combinations of starch (1-3%), fat (0.5-1.5%), fructo-oligosaccharide (0.5-1.5%) and inulin (0.5-1.5%) were determined by using Response Surface Methodology (RSM) and used to formulate the yoghurt. From the results the best combination was optimized and used to prepare low-fat flavored probiotic mango yoghurt. The probiotic activities and various physico-chemical, sensorial properties of yoghurt along with the storage for 15 days were investigated in this study. From the *in vitro* tests suggested that the probiotic used exhibited good adhesive properties along with resistance to simulated gastric and intestinal fluids at various pH. The probiotic was also observed to exhibit antimicrobial properties against certain pathogenic bacterial strains. The physico-chemical studies suggested that the low-fat yoghurt has considerably lower syneresis and higher water holding capacity (WHC). The protein content was ranged from 2.87±0.24% to 4.19±0.58% in probiotic samples and 2.39±0.19% to 4.31±0.34% in case of control samples during storage. There was significant difference between ash content of the probiotic yoghurt sample and control when starch was used as biothickener in addition with the prebiotics. The sensory analysis suggested that there was no significant difference between overall acceptability the low-fat flavored probiotic yoghurt and the control.