

## **DEVELOPMENT OF PROBIOTIC VEGAN YOGHURT**

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The demand for alternatives to cow milk is growing due to problems with allergenicity, desire for vegetarian alternatives, lactose intolerance, high price and scarcity of cow milk. Soy milk is considered as an alternative to cow milk. However, consumption of soy milk is limited due to the inherent off flavors, presence of anti-nutritive factors and flatulence. These can be overcome up to a considerable extent by lactic fermentation. Further, studies have shown that soymilk is a good substrate for some *Lactobacilli* and bifidobacteria. Hence, the aim of the current study was to develop fully vegan whole soy probiotic yoghurt to be used as an effective probiotic carrier food.

Carboxymethylcellulose, isolated soy protein, carrageenan and agar agar at different levels were compared with the 0.75% level of gelatin to select the best stabilizing agent and agar agar 0.2% was selected as the best stabilizing agent. Sensory evaluation was done for the soy yoghurts fermented only with yoghurt starter culture bacteria, starter culture bacteria + bifidobacteria, starter culture bacteria + *Lactobacillus acidophilus* and starter culture bacteria + mixture of bifidobacteria and *Lactobacillus acidophilus*. The selected sample was stored for two weeks at 4°C and physico-chemical parameters, viable counts of total lactic acid bacteria and bifidobacteria were measured. Probiotic cow milk yoghurt was formulated with gelatin as the stabilizer in order to compare the microbiological parameters. Friedman non-parametric statistics was used for the statistical analysis of the sensory test. Other parameters were analyzed by CRD using SAS software package.

The yoghurt containing bifidobacteria was ranked superior in terms of overall flavor and texture. Viscosity of the soy yoghurts was significantly ( $P < 0.05$ ) increased during storage starting from  $33.5 \pm 1.87$  mPas to  $75 \pm 7.12$  mPas by the 13<sup>th</sup> day of storage. The pH was significantly ( $P < 0.05$ ) decreased from  $4.65 \pm 0.01$  to  $4.43 \pm 0.04$ . Both titratable acidity and syneresis initially decreased and then increased and the changes were significant ( $P < 0.05$ ). At the beginning, the titratable acidity was  $0.46 \pm 0.05$  % and it was  $0.57 \pm 0.02$  % at the end. The syneresis at the beginning was  $57.42 \pm 7.33$  % and it was decreased up to 10<sup>th</sup> day of storage and then again increased to  $41.71 \pm 4.13$  % at the end. The highest viable bacterial counts were observed at the 7<sup>th</sup> day of storage and they were significantly higher than that of probiotic cow milk yoghurt. This may be due to the presence of soy oligosaccharides, which are proven prebiotics. Soy milk with agar agar stabilizer can be used to produce 100% vegan yoghurt having two weeks shelf life and incorporation of bifidobacteria could improve the sensory and microbial quality of the product. Further, this may be well suited for the people with high blood cholesterol.