

Selection of a Most Suitable Synbiotic Lassi Matrix for Delivery of Probiotic Strain *Lactobacillus helveticus* MTCC 5463 in Geriatric Volunteers

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Objective

The probiotic attributes, activity and viability of a strain in a probiotic product are known to be influenced by the food matrix. The present work was conducted to evaluate four types of synbiotic lassi and select one for delivering large number of viable probiotic organisms in the geriatric volunteers undergoing interventional study for clinical efficacy and metagenomic study of gut microflora.

Methodology

Toned milk was fermented by mixed culture of probiotic strain *Lactobacillus helveticus* MTCC 5463 and *S.thermophilus* MTCC 5460 (our indigenous isolate) and supplemented with prebiotic inulin and/or (i) Honey (ii) Oat (iii) *Safed musli* and (iv) Carrot. The four synbiotic products thus developed were subjected to sensory, chemical, microbiological and shelf life study. Sensory evaluation of the products were done by an expert panel of judges on a 9 point hedonic scale. Compositional analysis data for moisture, total solids, fat, carbohydrate, protein, acidity, pH, ash, free fatty acid and tyrosine content were taken. Microbial counts for probiotic, streptococci, coliform and yeast and mold were measured on selective media using standard viable count procedure before and during storage of products at 5±2°C for 28 days of storage.

Result and Discussion

Overall acceptability data (Figure 1) for sensory evaluation showed that synbiotic lassi containing honey was the most preferred product giving overall acceptability score of more than 6.5/9.0 even after 28 days of storage. In all products, overall increase in lactic acid ranged from 0.6 to 1.3% and highest acidity was observed in carrot containing product followed by musali, honey and oat containing products. Overall compositional analysis indicated that protein and total solids were high in oat based lassi as compared to other products. Free fatty acid contents increased during storage period and this increase was low in honey and carrot containing products compared to others. Good viability of probiotic strain (>9 log cfu/g) was observed in all products till the end of 28 days of storage (Figure 2). Coliforms and yeast and mold were absent during storage period in all the products. High streptococci counts were found in carrot as well as honey products compared to others.



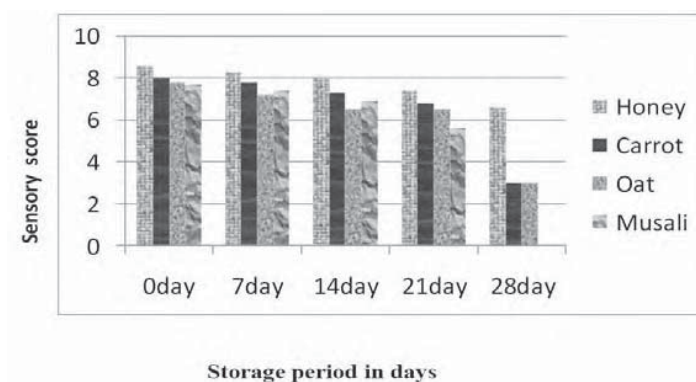


Figure 1. Overall acceptability of synbiotic lassi products during storage at $5\pm 2^{\circ}\text{C}$

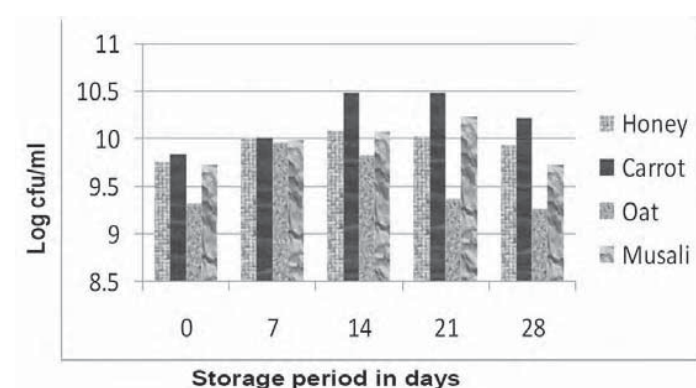


Figure 2. Changes in the probiotic count of synbiotic products during storage at $5\pm 2^{\circ}\text{C}$

Conclusion

The primary objective of delivering a large number of viable probiotic strain is being fulfilled by all the products even at the end of shelf life with the highest being the carrot based drink followed by honey based lassi. However, honey based lassi was most acceptable at all the periods of storage. Hence, based on the results of sensory evaluation, probiotic count and shelf-life study, synbiotic lassi with honey was adjudged best and is selected for feeding the geriatric volunteers in the clinical trial during further study.

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