

Title : Development of Probiotic drink powder containing Whey protein and Piper betle (Betel leaves) extract

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Introduction:

Today concepts in nutrition are expanding emphasizing on the use of foods to improve health and reduce the risk of diseases. The present study was carried out to evolve a protocol for the development of probiotic drink powder containing whey protein (WP) and betel leaves extract (BLE).

Methodology:

BLE was spray dried at inlet and outlet temperature of 110.5-110.90C and 60-750C respectively at an aspirator rate of 47%. *Bacillus coagulans* was revived and spray dried at inlet and outlet temperature of 110.2-110.50C and 55-750C respectively at an aspirator rate of 48%. Spray dried BLE, *B. coagulans* and 70% WP were combined (5%, 1%, 78% respectively) to develop probiotic drink powder. To enhance the flavor, cardamom powder and fennel seed powder were added. Two variations of the powder were prepared, one without sugar (Probiotic drink powder: PDP) and the other containing sugar (Probiotic drink powder containing sugar: PDPS). Samples were packaged and stored in triple laminated bag for 16 days at room temperature (27-320C) and were analyzed for total viable count at day 1, 8 and 16 and sensory characteristics at day 1, 8, 16.

Results:

On analyzing the nutritional profile, it was found that PDPS contained 85 Kcal energy, 11 g carbohydrate, 9 g protein and 0.5 g fat per serving (15g), whereas, PDP contained 55 Kcal energy, 5 g carbohydrate, 9 g protein and 0.5 g fat per serving (15g). Viable count was higher for PDP (2.3×10^8 cfu/g) which reduced by 1 log cycle whereas, for PDPS, it was 0.2×10^8 cfu/g which remained almost constant to 0.19×10^8 cfu/g after 16 days of storage. The acceptability scores for aroma, appearance, flavour, taste for PDPS was higher than PDP. However, the results were non significant ($p > 0.05$).

Conclusion:

The study shows that the probiotic organism i.e., *Bacillus coagulans* survived the spray drying procedure and hence it can be used to make a healthy powder with biological benefits which can be made commercially available. The sensory scores showed that PDPS was better acceptable. This could be because of the presence of sugar in the sample. Addition of sugar enhanced the calorie density of PDPS. Based on the results of the current study, it can be concluded that the probiotic drink powder has a good potential as a health drink that may help prevent many lifestyle and chronic diseases.

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