

DEVELOPMENT AND QUALITY EVALUATION OF FERMENTED RICE BRAN AND PROBIOTIC INCORPORATED ICE CREAM

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This study was conducted to investigate the potential of developing a fermented rice bran and probiotic incorporated ice cream. Probiotic culture containing *Bifidobacterium* sp., *Lactobacillus acidophilus*, *Lactobacillus delbrueckii* subsp. *bulgaricus* and *Streptococcus thermophilus* (10^{12} CFUml⁻¹) was used. Sensory evaluation was conducted to select the best level from 1%, 2%, and 3% of rice bran incorporated ice cream, where 1% treatment showed the highest preference. Six treatments as, control (T₁ – plain ice cream without rice bran or probiotic), probiotic only (T₂), non-fermented rice bran only (T₃), non-fermented rice bran + probiotic (T₄), fermented rice bran (T₅), and fermented rice bran + probiotic (T₆) incorporated ice cream was analysed. The best treatment was selected through a sensory evaluation. Titratable acidity (TA), pH, and microbiological quality was tested during the storage (-18°C) for 3 weeks. Dry matter% (DM), crude protein%, crude fat%, ash% and overrun% of all the treatments were measured. Completely Randomized Design was used with three replicates. The highest preference for colour and overall acceptability was recorded for T₆. Significantly ($p < 0.05$) high DM%, ash%, and overrun% were observed in T₃ (39.25 ± 0.26 , 0.93 ± 0.01 , 34.37 ± 0.52), T₄ (39.17 ± 0.35 , 0.92 ± 0.02 , 34.33 ± 0.59), T₅ (39.12 ± 0.40 , 0.93 ± 0.04 , 34.34 ± 0.39) and T₆ (39.13 ± 0.16 , 0.94 ± 0.01 , 34.85 ± 0.32), respectively, compared to that of T₁ (38.36 ± 0.12 , 0.87 ± 0.01 , 30.8 ± 0.65) and T₂ (38.35 ± 0.40 , 0.89 ± 0.02 , 31.58 ± 0.40). During storage, pH of all treatments decreased ($6.63 \pm 0.01 - 6.53 \pm 0.01$), while TA increased ($0.23 \pm 0.01 - 0.29 \pm 0.01$). A reduction of probiotic count ($10^9 - 10^7$ CFUml⁻¹) was observed in T₆, however, the value remained above the minimum therapeutic value (10^6 CFUml⁻¹). The fermented rice bran (1%) and probiotic collectively enhanced the consumer preference and nutritional properties of ice cream without quality deterioration at -18 °C for 3 weeks.

Keywords: Fermented rice bran, Ice cream, Nutritional properties, Probiotics