

Atchareeya Nakkarach 2014: Production of Probiotic Beverage from Riceberry Rice. Master of Science (Biotechnology), Major Field: Biotechnology, Department of Biotechnology. Thesis Advisor: Miss Ulaiwan Usansa, Ph.D. 144 pages.

Recently, a number of lactose intolerant consumer and demand of the vegetarian probiotic products is concerned. Therefore, this research aimed to develop non dairy probiotic beverage from Riceberry rice. It was germinated for five days to maximize GABA content (270 mg/ kg) dried malt and extracted with hot water (1:3) for probiotic malt-based beverage production. The five probiotic bacteria (*L. plantarum* TC24, *L. acidphillus* TISTR450, *L. reuteri* KUB-AC5, *L. Johnsonii* KUN119-2, *E. fecalis* N1-33) were tested their ability to grew in rice malt extract, survival of bacteria in acid and bile salt condition, antimicrobial activity, and preference test. *L. plantarum* TC24 was the most preferred by panelist and appropriated for using as probiotic bacteria. Inulin was suitable prebiotic for enhancing growth in the host intestinal more than FOS by prebiotic activity score 0.2. The probiotic beverage was formulated and cell encapsulation by alginate was applied for improving bacterial survival in gastrointestinal tract. However, encapsulated cell was leaked from the bead by acid degeneration and the survival of encapsulated and free cell were decreased to 10^6 cfu/ml after kept at 8 and 30 °C for 26 and 21 days, respectively. The sensory test confirmed that the product preferences was changed after storage for 14 days. The marketing survey with one hundred consumers indicated that the honey flavor was recommended and the shelf life of honey flavored beverage was 21 days at 8°C. One hundred milliliter of final product contained 6.84 mg GABA, vitamin A 163 µg and 10^{11} cfu/ml probiotic cell. The consumer test by fifty persons rated degree of preferences in between neither like nor dislike to like slightly and the product acceptance was increased significantly after they knew product benefit information. This research suggested that Riceberry rice malt extract was high potential media for probiotic or synbiotic beverage production.

Student's signature

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