

FORMULATION OF HIGH-FIBER PROBIOTIC ICE CREAM BASED ON AGUNG BANANA FLOUR (*Musa paradisiaca*)

ABSTRACT

Ilma Ainun Nazilah, 2026. Formulation of High-Fiber Probiotic Ice Cream Based on Agung Banana Flour (*Musa paradisiaca*). Applied Bachelor's Program in Nutrition and Dietetics, Department of Nutrition, Malang Public Health Polytechnic, Ministry of Health. Advisor: **Dr. Yohanes Kristianto**, Grad. Dipl. Sci. MFT

Background: The development of functional foods based on local food ingredients can increase the utilization of food resources and produce value-added products. Agung banana flour has the potential to serve as a source of dietary fiber, inulin as a dietary fiber with prebiotic properties, and Greek yogurt as a source of probiotics. A combination of these three ingredients can be developed into high-fiber probiotic ice cream. Research Objective: To analyze the physical characteristics, pH value, and organoleptic characteristics, as well as the effect of varying proportions of Agung banana flour, inulin, and Greek yogurt on the characteristics of high-fiber probiotic ice cream. Research Method: This study is a laboratory-based experimental study using a D-Optimal Mixture Design with proportions of Agung banana flour at 8–12%, inulin at 5.2–6.2%, and Greek yogurt at 20–25%. The design yielded 17 runs as experimental points. The parameters observed included physical characteristics, pH, and organoleptic properties. The data were analyzed using Design-Expert® and described descriptively according to the type of response. **Research Results:** Variations in the proportions of Agung banana flour, inulin, and Greek yogurt had a significant effect on overrun ($p=0.0204$) and overall acceptability ($p=0.0355$). The pH values of the 17 test runs ranged from 6.17 to 6.42, with an average of 6.26. The average organoleptic scores were as follows: color 7.25, appearance 7.29, aroma 7.25, sweetness 7.21, texture 7.00, ice crystal sensation 6.83, freshness 6.83, chewiness 7.10, and aftertaste 7.37. **Conclusion:** Variations in the proportions of Agung banana flour, inulin, and Greek yogurt affect the characteristics of high-fiber probiotic ice cream, particularly overrun and overall acceptability. The pH values and organoleptic characteristics showed relatively consistent results across the 17 test runs.

Kata Kunci : es krim probiotik, tepung pisang agung, inulin, *Greek yoghurt*, *Mixture Optimal Design*