

ABSTRACT

Freeze drying is one of the drying technique to preserve product by rapidly freezing it and then subjecting to a high vacuum which removes ice by sublimation. As a result, this process could produce dried products with premium quality with minimal damage of the nutritional and sensory qualities of the product. This study aims to investigate the effect of ascorbic acid and citric acid as a pre-treatment in freeze-dried banana product towards the yield, color, moisture, water activity, as well as the sensorial preferences. In this study, different levels of ascorbic acid (2%), citric acid (2%), and their combination (1% ascorbic acid + 1% citric acid) were prepared as pre-treatments for the banana. Then all the bananas were freeze-dried at -50°C for primary drying and 30°C for secondary drying with the complete 72 hours freeze-drying process. The freeze-dried banana chips were analyzed on its yield, color, moisture content, water activity, and hedonic test. The results showed that the combination of ascorbic acid and citric acid (1% ascorbic acid + 1% citric acid) as a pre-treatment give a significant ($P < 0.05$) effect on the prevention of browning reaction which is indicated by the lighter in color of the freeze-dried banana product. The sensorial hedonic test showed banana chips treated with ascorbic acid (2%) and citric acid (2%) were less liked by the panelists. It can be concluded that the freeze-drying process effectively reduces the moisture and water activity to around 4.86%-5.39% and 0.28-0.34 water activity value, respectively. This study suggests that the banana chips can be produced by using freeze drier, which has low moisture, water activity, maintain the lightness of the color, etc. Further studies are needed to analyze the shelf-life of the chips during storage and the texture profile of the chips for determining the crispiness level of the chips.