

Preservation Study on Tofu using Liquid Smoke

Wahyudi David¹, Kurnia Ramadhan¹, Ardiansyah¹, Rizki A Maryam¹, Anwar Kasim²

¹Department of Food Science and Technology, Universitas Bakrie, Jakarta, Indonesia

²Agricultural Product Technology Department, Universitas Andalas, Padang, Indonesia



Abstract

This study was aiming to determine the potency of liquid smoke in preserving Tofu. The liquid smoke was obtained from coconuts shell through 10 hours pyrolysis process and distilled separately at five different temperatures: 100oC (A), 110oC (B), 120oC (C), 130oC (D), and 140oC (E). Liquid smoke was dissolved in water and used to immerse the tofu samples for six days. The liquid smokes were analyzed for its phenolic content, pH, and total acidity, whereas the tofu samples were tested for total plate count (TPC) and sensory analysis. The study shows all liquid smokes comply with the characteristics of preservatives agent, i.e. phenolic content range from 0.15% to 0.30%, pH from 2.06 to 2.30, and total acidity from 0.11% to 0.23%. TPC results from all samples range from 1.3×10^3 to 1.8×10^3 CFU/mg which were complying with Indonesia National Standards for tofu. However, tofu samples immersed with liquid smoke D and E had the most preferred appearance and aroma judged by panelists.

Keywords: Liquid smoke, distillation temperature, Preservation, tofu

Background

Tofu is commonly consumed by Indonesians. Tofu can be easily spoiled in 1-2 days in ambient temperature. Liquid smoke has active substance for antimicrobial where contains phenols, carbonyl and acids (Soldera, 2008). However, liquid smoke contains Tar and benzo(a)pyrene which lead to carcinogenic and destruct essential amino acids in tofu. Therefore, it needs a study to determine the purification of liquid smoke and its effect for preserving tofu.

Material & Methods

Coconut shells were crushed into 2 mesh size, then pyrolyzed for 10 hours to obtain the first grade liquid smoke. Liquid smoke was re-distillate with five different temperatures: 100°C (A), 110°C (B), 120°C (C), 130°C (D), and 140°C (E). Liquid smoke was dissolved to 3% (v/v) in water and used to immerse the tofu samples for six days. The liquid smokes were analyzed for its phenolic content, pH, and total acidity, whereas the tofu samples were tested for total plate count (TPC) and sensory analysis.

Result and Discussion

The study shows all liquid smokes comply with the characteristics of preservatives agent, i.e. phenolic content range from 0.15% to 0.30%, pH from 2.06 to 2.30, and total acidity from 0.11% to 0.23%. TPC results from all samples range from 1.3×10^3 to 1.8×10^3 CFU/mg which were complying with Indonesia National Standards for tofu (SNI 01-2332-2009). However, tofu samples immersed with liquid smoke D and E had the most preferred appearance and aroma judged by panelists.

Conclusions

The study conclude that tofu could preserved until six days and the optimum distillation was 130°C and 140°C and for the preference as well.

References

Soldera, S., Sebastianutto, N. and Bortolomeazzi, R. 2008. Composition of phenolic compounds and antioxidant activity of commercial aqueous smoke flavorings. *Journal of Agriculture and Food Chemistry* 56: 2727 – 2734.

