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“Development on the margin”

Aging Milled Rice by Radio Frequency Heat Treatment

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Abstract

This investigation aimed at evaluating the radio frequency (RF) heat treatments as an alternative aging technique for 6 months milled rice storage. The experiment was conducted at the Postharvest Research Institute, Chiang Mai University, Thailand. Milled rice cultivar KDML 105 with an initial 11.6 percent moisture content was used. The samples were exposed to RF heat treatments at the operating frequency of 27.12 MHz with treatment temperatures of 70 and 85°C. The treatment durations were 5, 10 and 15 minutes. Their cooking qualities were evaluated using the elongation ratio of kernel, the gel consistency, the texture, and the viscosity. The RF heat treatment at 85°C for 5 minutes provided the give the best results; the moisture content decreased to 11.2 percent which was the lowest moisture loss as compared to the control, the ratio of kernel elongation increased from 1.345 to 1.367 and the gel consistency significantly decreased from 9.87 to 9.70 cm, whereas their textures as hardness and stickiness significantly increased 17.62 %, 21.25 %, respectively. In addition, the viscosity profiles which are the values of breakdown (from 538 to 599 RVU), the final viscosity (from 4197 to 4233.33 RVU), and the pasting temperature (from 71.23 to 78.63°C) increased, while the value of setback (from 1604.3 to 1425.8 RVU) decreased. It was concluded that the physical properties of milled rice after RF treatment at 85°C for 5 minutes were equivalent to those from 6 month storage. Therefore, it can be suggested as alternative rice aging technique.

Keywords: Aging, cooking qualities, milled rice, radio frequency