EFFECT OF THE COOLING STAGE ON CRISPY BANANA DRIED WITH INITIAL HTST PULSE

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Banana (Musa acuminata Colla) slices were dried with initial high temperature and short time (HTST) hot air pulse at 150°C/15min, following a gradual cooling stage and a final drying at 70°C until aw below 0.3. It was evaluated the influence of the distinctive time period and temperature amplitude of cooling stage on the final products attributes: shrinkage, pore size distribution, color and number of peaks and maximum force on stress-strain diagram. The shrinkage was expressed by the final and initial bulk volume ratio, from 31.42 ± 2.98 to 87.14 ± 14.60 the lowest value in high amplitude and short period. The pore size distribution was visualized in photos obtained by optical microscopy, the shortest total number and the largest pores in high amplitude and short period. The maximum force was from 29.73 ± 6.23N to 43.84 ± 12.73N, the higher value in high amplitude and short period. The number of peaks was from 8.0 ± 3.4 to 17.5 ± 3.2, the lowest value in high amplitude and short period. The color was measured in CIELab scale. The results were statistically evaluated by analysis of variance (ANOVA) using Tukey test. Results showed that the gradual reduction in temperature (short amplitude and high period), in the cooling stage, was important for the porous structure retention, but caused the dark color products which decreased the samples brightness. In contrast, sudden reduction of temperature (high amplitude and short period) caused the loss of the porous structure, and harder and shrunken final products, however, less color degradation was caused. A gradual decrease of temperature, with amplitude 10°C and period 7.5 minutes, totaling 75 minutes of the cooling stage, was adequate to maintain the porous structure with less color degradation.