



Korrakot Lorlowhakarn 2007: Modification of Chai Nat 1 Rice Flour for Improvement of Ready-To-Eat Pasteurized Pouch Noodle Products. Master of Science (Food Science),
Major Field: Food Science, Department of Food Science and Technology.
Thesis Advisor: Professor Onanong Naivikul, Ph.D. 202 pages.

Heating process during pasteurization is a method to preserve rice noodles but it will cause softening which quality may be unacceptable. This research was aimed to modify Chai Nat 1 rice flour by heat-moisture-treatment (HMT) and UV-irradiation to improve the texture of pasteurized noodles. The HMT modification at 110 or 120°C for 1-5 h attributed the HMT rice flour significantly reduced ($p \leq 0.05$) the peak viscosity to 136.5-286.4 RVU, the breakdown to 7.7-38.8 RVU and the setback to 19.2-158.6 RVU, and to significantly increased ($p \leq 0.05$) the pasting temperature 2.5-10.8°C. The decrease in the relative crystallinity and gelatinized enthalpy but increase in the gelatinized temperature showed that the HMT modification changed the property of the crystalline region in the flour. The increase in the gelatinized temperature may be the result of molecular rearrangement. The color of HMT rice flour had more redness ($a^* = 0.2-1.2$) and yellowness ($b^* = 4.3-6.6$) than the native flour. On the other hand, the UV-irradiated flour, with 25 or 45% moisture content which was irradiated for 3-9 h exhibited the decrease significantly ($p \leq 0.05$) in the peak viscosity to 267.5-291.9 RVU, the breakdown to 31.2-38.3 RVU, the final viscosity to 299.5-340.0 RVU and the setback to 56.4-85.0 RVU but exhibited the increase significantly ($p \leq 0.05$) in the pasting temperature 2.1-4.5°C. However, the UV-irradiated rice flour showed no significantly different ($p > 0.05$) in the relative crystallinity, enthalpy and gelatinized temperature compared to the native rice flour. Furthermore, the UV-irradiated rice flour showed increasing in the brightness ($L^* = 97.5-97.7$) and yellowness ($b^* = 3.4-3.7$). The HMT120-5 and UV45-7 modified flour were chosen to produce the rice noodle and studied the optimum composition of the modified Chai Nat1 rice flour in the rice noodle. The mixtures of 5, 10 and 20% of modified flour which was substituted in the fraction of native flour were investigated. The 5% HMT120-5 pasteurized small strip rice noodle showed the most firmness from sensory evaluation. As a result from UV-irradiated flour mixture, the 5, 10 and 20% UV45-7 pasteurized spicy rice noodle showed no significantly different ($p > 0.05$) peak force (94.9-103.8 g) and sensory evaluation compared to the controlled noodle. The microbiological quality of the pasteurized rice noodles, stored at 4°C for 8 weeks, met the requirement of the standard regulation for safety.

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Student's signature



Thesis Advisor's signature

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