

Suchanya Dorglamud 2011: Rice Noodle Quality Improvement by Protease. Master of Science (Food Science), Major Field: Food Science, Department of Food Science and Technology. Thesis Advisor: Associate Professor Prisana Suwannaporn, Ph.D.
102 pages.

This research aimed to study the effect of protease (Protease-RF) on the physicochemical properties of rice flour comparing to the conventional alkali steeping method (Alkali-RF). Alkali steeping process usually causes large amount of alkali and salt residues leading to a costly wastewater treatment. Neutral proteases (Protin NY100, Collupulin) and alkali proteases (GA and Subtilisin A) were used to remove rice protein by varying concentration (0.0025, 0.005 and 0.001 percents) and digestion temperature (25 and 50°C) for 1 h. Results showed that Protease-RF had higher protein content (2.2-4.1 %) than Alkali-RF (0.5 %). Final viscosity and setback of Protease-RF were higher than Alkali-RF with lower breakdown. Rheological pattern of Protease-RF and Alkali-RF using temperature sweep profile were similar which indicated that the intact starch granule were still remained. The storage modulus (G') after cooling of both treatments increased to a greater extent but Alkali-RF (5897.5 Pa) were higher than Protease-RF (3270.0-4095.0 Pa) since less protein was left to obstruct starch recrystallization. Protein characterization by SDS-PAGE found that Protease-RF had polypeptide bands MW 10-17, 17-26, 34-43 and 55-72 kDa. But Alkali-RF had only 55-72 kDa. The remaining of high MW polypeptides (>77kDa) had more effect on textural qualities of rice gels. Protease partly hydrolysed rice protein and could improve the textural qualities of rice gel. Use of protease was more applicable in the food industry. Physical properties of rice flour gel were according to protein content, granule disruption and shear force applied during measurement.

Student's signature

Thesis Advisor's signature