Thitima Tanvarakom 2014: Effect of Protein and Baking Conditions on Quality of Rice-Flour Bread. Master of Science (Agro-Industrial Product Development), Major Field: Agro-Industrial Product Development, Department of Product Development. Thesis Advisor: Associate Professor Nantawan Therdthai, Ph.D. 85 pages.

Bread is usually made from wheat flour which was imported from oversea. Development of the rice flour bread could increase value to broken rice and reduce wheat flour importion. However rice flour dough needed some protein to creat good attributes of the rice flour bread. In this study, effect of protein (soy protein isolate, whey protein concentrate and whole egg) and baking condition on quality of rice flour bread was determined. In hot air baking (HA), it was found that addition of 2 - 6 g soy protein isolate/100 g flour into dough could increase color L* (24.05 - 27.31), hardness (7.49 - 9.36 N) and cohesiveness (0.81 - 0.89) significantly ($P \leq 0.05$). In the contrary, it decreased specific volume (1.01 - 1.16 cm^3/g) and crust L* (42.08 - 60.38) significantly ($P \leq 0.05$). Addition of 2 - 6 g whey protein concentrate/100 g flour improved specific volume (1.42 - 1.48 cm^3/g) but decreased chewiness (43.21 - 51.31 N) significantly ($P \leq 0.05$). Addition of 17 - 51 g whole egg/100 g flour increased crumb b* (26.58 - 30.93), hardness (10.18 - 12.21 N) and chewiness (81.45 - 96.77 N), but decreased moisture content (65.29 - 66.68 % dry basis) and crust L* (40.16 - 56.33) significantly ($P \leq 0.05$). Regardless of types, addition of protein to rice flour bread caused a decreased glycemic index (70.19 - 80.14), compared with the glycemic index of the rice flour bread without protein (80.34). Variation of baking methods caused variation of quality of bread. HA produced the lowest specific volume (1.01 - 1.43 cm^3/g), crust L* (37.38 - 60.38) and hardness (4.22 - 12.21 N) but the highest moisture content (65.29 - 85.82 % dry basis). Microwave baking (MW) increased specific volume (1.11 - 1.55 cm^3/g), crust L* (72.90 - 82.55) and hardness (6.24 - 15.50 N) but decreased moisture content (41.41 - 72.76 % dry basis) and glycemic index (60.53 – 79.24), compared with HA. Similarly, hot air assisted microwave baking (HA-MW) could increase specific volume (1.03 - 1.53 cm^3/g) and hardness (4.27 - 14.50 N) but decrease moisture content (43.64 - 74.78 % dry basis). During storage at ambient temperature (30 °C) for 3 days, moisture content and springiness of bread were decreased, but hardness was increased significantly ($P \leq 0.05$). Nontheless glycemic index was not changed ($P > 0.05$).

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