

Ngamsirakhwan Permsri 2010: Optimal Water Quantity for Brown Rice Cooking and The Nutritional Changes of Cooked Brown Rice. Master of Science (Home Economics), Major Field: Food and Nutrition, Department of Home Economics. Thesis Advisor: Associate Professor Tasanee Limsuwan, Ph.D. 142 pages.

The objectives of this research were to study 1) optimal water levels for cooking brown rice 2) the factors related to optimal water for cooking brown rice 3) the differences in nutrients between raw and cooked brown rice and 4) the difference in Gamma Amino Butaric Acid (GABA) content between raw GABA rice and cooked GABA rice. Five varieties of rice; Munpu, Sung Yod, Hom Nin, Hom Mali and Hom Malidang were cooked with 3 levels of water; 1:1.7, 1:2 and 1:2.2 by weight. To analyze the optimal water levels for cooking brown rice, a nine-point hedonic scale in Randomize Complete Block Design was used for sensory evaluation and the statistical difference was analyzed by nonparametric statistical Friedman test of ranking and Wilcoxon matched-pairs Test. Analysis of the relation between the qualities factors of brown rice in regard to gel consistency, volume expansion, protein and amylase content and the optimal water quantity was analyzed by the selection of factors in a regression linear model. Analysis of the differences of nutrient values between raw and cooked brown rice and GABA content between raw GABA rice and cooked GABA rice were performance with Paired-Samples T-Test. Energy, carbohydrate, protein, lipid, fiber, ash, vitaminB1, vitamin 2, niacin, calcium and iron were determined in raw and cooked brown rice.

The results revealed that the optimal water quantity for cooking 5 varieties of brown rice were in relation of 1:2 and 1:2.2 rice and water weight. Quality factors related to the optimal water quantity were amylose content and the linear regression model used to estimate the optimal quantity to cook brown rice was $W=1.813 + 0.02A$.

The significant changes of nutritional values found in cooked brown rice were the reduction of carbohydrate by 59.81% and protein by 6.78% and increasing of lipid by 81.79%, fiber by 335.93%, ash by 32.69% and calcium by 16.60%. GABA content decreased by 78.65% in cooked GABA rice.

Student's signature

Thesis Advisor's signature