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Study on variation of amylose content and hydration properties of selected paddy varieties during storage

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Various physical and chemical changes occur in cereals during storage. A study was designed to determine occurrence of variations in physical and chemical properties of selected paddy varieties during early storage at ambient temperature conditions. Amylose content, swelling power (SW) and water binding capacity (WBC) of paddy varieties were selected, to investigate the changes occurring during four months storage. Three freshly harvested paddy varieties, namely BG 300, BG 352 and AT 362, were selected for the study. All cleaned and dried samples were stored in separate plastic baskets at ambient temperature conditions. Amylose content, swelling power and water binding capacity of all varieties were tested in every two weeks, up to four months storage period. The data obtained from the study were statistically analyzed using one way ANOVA (CI=95%) to determine the variation of selected physical and chemical properties during four months storage. There were no significant variations in amylose contents of each paddy variety during this period ($p<0.05$). The swelling power values of BG 352, BG 300, and AT 362 varieties did not have a noticeable increase from the 1st week to 5th week. From then onwards, it significantly increased from 7.49±0.06 g/g, 7.15±0.10 g/g, and 7.29±0.04 g/g to 8.43±0.03 g/g, 8.05±0.09 g/g and 7.73±0.05 g/g, respectively. Water binding capacities of three paddy varieties showed an incremental trend during the four months storage. Water binding capacity of BG 352, BG 300 and AT 362 varieties significantly rose from 0.97±0.007 g/g, 0.956±0.052 g/g and 1.199±0.082 g/g to 1.179 g/g±0.021, 1.112±0.070 g/g and 1.520±0.008 g/g, respectively during the study period. Even though there is no remarkable variation of amylose content of each variety during the four months' storage, hydration properties of all varieties increased significantly. Hence, it can be concluded that amylose is not the single factor that governs the changes in physical properties of paddy such as stickiness, water absorption, and swelling power following storage. Individual or interaction effect of other component of rice including starch, protein and lipid could be the reason for variations in physical and chemical properties of rice during storage.

Key words- Rice aging, Amylose content, Swelling power, Water binding capacity.

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