

Abstract

Three different varieties of rice (*Oryza sativa*) viz; IR8 (Raw), Ranjit (Parboiled) and Aijung (Raw) were procured from the local market and stored in two different conditions, one is stored in controlled conditions at 44% RH and ambient temperature and the other under ambient conditions. The samples were kept undisturbed for eight weeks and then for the next eight weeks the experiments were conducted at an interval of one week. During that period changes in moisture content, cooking characteristics, pasting properties and expansion kinetics of soaked rice samples were studied. The change in moisture content remained negligible during the study period. The initial moisture content of IR8 (raw), Ranjit (parboiled) and aijung (raw) were found to be 0.158 g/g of dry solid, 0.28 g/g of dry solid and 0.157g/g of dry solid respectively. Cooking time of the samples hardly showed any increase of 1-2 minutes from the initial day of experiment to the final day and remained constant most of the days. The pasting properties of rice were found out by the Rapid Visco-Analyser. RVA analysis of the samples showed that pasting temperature, final viscosity and setback showed an increasing trend whereas peak viscosity and breakdown viscosity showed a decreasing trend with increase in storage period. Soaking experiments were carried out to find expansion ratio and its characteristics with the help of image analysis. For this an imaging chamber is fabricated with the help of plywood and steel frame and image was taken with the help of a digital camera. The conversion of the image to suitable numerical value was done with the help of software Image J. Images of the samples were taken till the rice grains became disintegrated. The expansion ratio of all the samples was found to be less than 2. The expansion ratios were fitted to zeroth order and first order reactions kinetics. It was found that the zeroth order reaction rate kinetics lies between 0.0091 min^{-1} and 0.0335 min^{-1} while the first order reaction kinetics lied between 0.0042 min^{-1} and 0.0135 min^{-1} .

Key words: Moisture content, cooking characteristics, pasting properties, expansion ratio.