

Effect of Flour Concentration and Retrogradation Treatment on Physical Properties of Instant Sinlek Brown Rice

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Abstract : Sinlek rice flour beverage or instant product is a dietary supplement for dysphagia, or difficulty swallowing. It is also consumed by individuals who need to consume supplements to maintain their calorific needs. This product provides protein, fat, iron, and a high concentration of carbohydrate from rice flour. However, the application of native flour is limited due to its high viscosity. Starch modification by controlling starch retrogradation was used in this study. The research studies the effects of rice flour concentration and retrogradation treatment on the physical properties of instant Sinlek brown rice. The native rice flour, gelatinized rice flour, and flour gels retrograded under 4 °C for 3 and 7 days were investigated. From the statistical results, significant differences between native and retrograded flour were observed. The concentration of rice flour was the main factor influencing the swelling power, solubility, and pasting properties. With the increase in rice flour content from 10 to 15%, swelling power, peak viscosity, trough, and final viscosity decreased; but, solubility, pasting temperature, peak time, breakdown, and setback increased. The peak time, pasting temperature, peak viscosity, trough, and final viscosity decreased as the storage period increased from 3 to 7 days. The retrograded rice flour powders had lower pasting temperature, peak viscosity, breakdown, and final viscosity than the gelatinized and native flour powders. Reduction of starch viscosity by gelatinization and controlling starch retrogradation could allow for increased quantities of rice flour in instant rice beverages. Also, the treatment could increase the energy and nutrient densities of rice beverages without affecting the viscosity of this product.

Keywords : instant rice, pasting properties, pregelatinization, retrogradation

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