Optimization of Rice, Glutinous Rice and Maizena Flour Formulations on the Quality of Babas Gluten Fresh Bread Using Mixture Design Method

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ABSTRACT

Gluten-free white bread is bread made from ingredients that do not contain gluten such as purple sweet potato, cornstarch, and mocaf which are made through a fermentation process and then baked. The study aims to determine the relationship between the addition of glutinous rice flour and rice flour and determine the optimization of glutinous rice flour, rice and cornstarch formulations to produce gluten-free white bread. This study uses the Optimal (*Custom*) *Design* method on four responses, namely texture, staling rate, specific volume and color of hedonic quality using three treatment factors with lower and upper limits, namely rice flour (0%-30% or 0gr - 81gr), sticky rice with concentration (0%-10% or 0gr-27gr) and cornstarch with concentration (60%-100% or 162gr-270gr) in making gluten-free white bread. Data was analyzed using *design exspert* 13 with 16 formulations offered to obtain one optimal formulation determined for validation with 3 repeats. The results showed optimization of cornstarch formulation 263.217gr, rice flour 6.783gr predicted by the experimental design program 13 to produce gluten-free white bread with a texture value range between 1.69709-3.10289N, staling rate between 0.0241009-0.038757N/hour, specific volume between 2.87866-3.39345Cm 3/g, hedonic quality color between 3.45795-4.71028 (bright yellow to very bright . The validation results of 3 repetitions resulted in gluten-free white bread with a texture value of 2.94717N, a *staling rate* of 0.0375667N/hour, a specific volume of 3.105 cm 3/g and a hedonic quality color of 3.59%.

Keywords: Gluten-free white bread, *Optimal (Custom) Design*