Optimasi Formulasi Tepung Sorgum Dan Mocaf Pada Muffin *Gluten Free* Menggunakan Metode *Simplex Lattice Design* *(Optimization of Sorghum Flour and Mocaf Formulation in Gluten-Free Muffins Using the Simplex Lattice Design Method)*

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ABSTRACT

Gluten-free muffins are cakes made from ingredients other than wheat flour specifically mocaf and sorghum flours as an effort to reduce reliance on wheat flour. This study aimed to identify the optimal formulation of sorghum and mocaf flours and to determine the effect of these two flours on the physical, chemical, and organoleptic characteristics of gluten-free muffins. The research method used the Simplex Lattice Design (SLD) from the Design Expert 13 software, consisting of two factors mocaf and sorghum flour resulting in eight formulations, which were evaluated for the parameters of specific volume, texture, protein content, moisture content, color (L, a, b), sensory texture, taste, hedonic quality, and acceptability. The results showed that the combination of sorghum and mocaf flours had a significant effect on all response variables, except for the L, a, and b color values and texture. The specific volume was 2.189 cm³/g, the texture was 2.486 N, the protein content was 6.077%, the moisture content was 29.710%, the L value was 61.77, the a value was 7.243, the b value was 35.05, the taste score was 3.190, the texture was 3.365, and the hedonic was 3.520. The optimal formula is the combination of 60% mocaf flour and 40% sorghum flour, with a desirability value of 0.656.

Keywords: *gluten-free, muffin, mocaf , Simplex Lattice Design, sorghum*