

Production of Gluten-Free Bread Using Emulsifying Salts and Rennet Casein

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Abstract : Celiac disease is a chronic intestinal disease observed in individuals with gluten intolerance. In this study, our aim was to create a protein matrix to mimic the functional properties of gluten. For this purpose, rennet casein and four emulsifying salts (disodium phosphate (DSP), tetrasodium pyrophosphate (TSPP), sodium acid pyrophosphate (SAPP), and sodium hexametaphosphate (SHMP)) were investigated in gluten-free bread manufacture. Compositional, textural, and visual properties of the gluten-free bread dough and gluten-free breads were investigated by a two-level factorial experimental design with two-star points ($\alpha = 1.414$) and two replicates of the center point. Manufacturing gluten-free bread with rennet casein and SHMP significantly increased the bread volume ($P < 0.0001$, $R^2 = 97.8$). In general, utilization of rennet casein with DSP and SAPP increased bread hardness while no difference was observed in samples manufactured with TSPP and SHMP. Except for TSPP, bread color was improved by the utilization of rennet casein and DSP, SAPP, and SHMP combinations. In conclusion, it is possible to manufacture gluten-free bread with acceptable texture and color by rennet casein and SHMP.

Keywords : celiac disease, gluten-free bread, emulsified salts, rennet casein, rice flour

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