

ABSTRACT

The freezing dough technique has been implemented in the bakery industries because it offers many advantages. However, the freezing technique has drawbacks such as gluten depolymerization, reduced yeast activity, and other problems that might reduce baked frozen dough's final quality. The addition of additives like Transglutaminase (TGASe) and Vital Wheat Gluten (VWG) was reported to improve the baking performance and characteristics of baked frozen dough. This study aims to evaluate the effect of TGASe and VWG addition to the baking performance of the bread after one month of storage at -18°C . The baking performance analyzed in this study are volume, colour, moisture content, and texture of baked frozen dough. The present study observed that VWG 2%'s addition had a more positive effect on baked frozen dough because VWG 4% addition might form excessive gluten crosslinking, which causes an adverse effect. The addition of VWG 2% significantly ($p < 0.05$) improved the bread's volume and texture. The addition of TGASe 0.05% also showed significant ($p < 0.05$) improvement towards the volume, colour (a^* only), and moisture of the bread. But, the addition of TGASe slightly increased the hardness of the bread. However, both TGASe concentrations (0.025%; 0.05%) used in this study showed a similar effect to each other. The characteristics of baked frozen dough fluctuated in the first month. Therefore, it is recommended to use longer storage period time.

Keywords: Frozen dough, prolonged storage, bread characteristics, transglutaminase, vital wheat gluten