ABSTRACT

Creep-Recovery Parameters of Gluten-Free Batter and Crumb Properties of Bread Prepared from Pregelatinised Cassava Starch, Sorghum and Selected Proteins

Calvin Onyango, Christopher Mutungi, Günter Unbehend, Meinolf G. Lindhauer

The effect of egg white, skim milk powder, soy protein isolate and soy protein concentrate on creep-recovery parameters of gluten-free batter made from sorghum and pregelatinised cassava starch was studied. Batter treated with egg white had the highest deformation and compliance parameters and lowest zero shear viscosities and differed significantly ($P < 0.05$) from the other treatments. However, this batter recovered its elasticity sufficiently and its elastic portion of maximum creep compliance did not differ significantly ($P < 0.05$) from the other treatments. Unlike the other treatments, egg white did not decrease bread volume and exhibited the lowest crumb firmness and staling rate. Optimisation of the amount of egg white with diacetyl tartaric acid esters of mono and diglycerides (DATEM) showed that creep-recovery parameters and crumb hardness were affected by the linear, quadratic and interaction effects of the input variables. Treatment with 6% and 0.1% w/w fwb egg white and DATEM, respectively, gave gluten-free batter with the least elastic portion of maximum creep compliance ($Je/Jmax = 11.65\%$) which corresponded to the lowest crumb firmness (790.8 g).

Keywords: Cassava, egg white, gluten-free bread, skim milk powder, soybean concentrate, soybean isolate, sorghum