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Research article

TAILORED 3D FOOD PRINTING INK RECIPE WITH ISOLATED SOY PROTEIN, TEMPEH FLOUR AND PROBIOTIC : COMPARISON OF DURIAN SEED FLOUR, SODIUM ALGINAT AND XANTHAN GUM AS A HYDROCOLLOID

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Abstract

This study is a part of the 3DFP product development which is formulated with isolated soybean protein (ISP), defatted tempeh flour (DTF), durian seed flour (DSF), and probiotic. The potential of durian seed flour as an alternative hydrocolloid ingredient for 3D food printing ink will be investigated. The food-inks were printed at different temperatures of 30°C, 40°C and 50°C, then baked at 145°C for 6 min. The printed results were analyzed for printability and microstructure. The rheology of the food ink formulated with DSF measured at different temperatures showed comparable behavior to those formulated with SA and XG. Moreover, the higher the shear rate the higher the shear stress and the lower viscosity of those food-inks. The results also showed that food-ink had lower yield stress at higher temperatures. These results indicate that DSF is a suitable ingredient for food-ink formulation with acceptable printability, comparable to those formulated with SA and XG. Based on the printability and microstructure analysis, food inks printed at 40°C were superior to those printed at 30°C and 50°C. Therefore, DSF is a qualified ingredient that can be used in the formulation of 3DFP food-ink.