Abstract

This study aimed to determine types of stabilizer(s) suitable for the production of probiotic low fat ice cream by examining the survival of probiotic *Lactobacillus casei* 01, rheological properties and consumer acceptance of low fat ice cream containing xanthan gum and guar gum as a single stabilizer or a combination with *kappa*-carrageenan during storage at -18 $^{\circ}$C for 210 days. The results showed that types of stabilizers did not affect the survival of *L. casei* 01 ($p > 0.05$). In addition, *L. casei* 01 viability did not significantly reduce ($p > 0.05$) throughout 210-days storage with the minimum counts of 7.4 log cfu/ml. Both probiotic ice cream mix and probiotic ice cream had lower pH than did the control (without probiotic added). All probiotic ice cream mixes demonstrated shear thinning behavior with higher elastic modulus (G') compared to the control. All probiotic ice cream showed weak gel behavior with higher G', viscous modulus (G'') and complex viscosity (η^*) compared to the control, particularly probiotic ice cream containing *kappa*-carrageenan. G' of probiotic ice cream using guar gum with or without *kappa*-carrageenan was lower than that of probiotic ice cream using xanthan gum with or without *kappa*-carrageenan during the first 30 days but comparable thereafter. The slope of the relationship between G' and storage period showed that ice creams containing xanthan gum had lower slope values than those containing guar gum indicating different stabilizer had different impact on ice crystal growth and ice recrystallization retardation. Sensory evaluation revealed that the addition of *L. casei* 01 to the ice cream with xanthan gum or xanthan gum-carrageenan showed highest consumer acceptability in flavor, taste, texture and overall liking ($p \leq 0.05$). The results suggested that high viability of *L. casei* 01 was not due to the effect ice recrystallization retardation of the stabilizer. Therefore, xanthan gum or xanthan gum in combination with *kappa*-carrageenan can be recommended as stabilizer used in low fat ice cream with great probiotic *L. casei* 01 counts and high consumer acceptance.