

Abstract

Consumer demands for sugar-reduced dairy products have driven the application of alternative sweeteners and hydrocolloids in order to ensure the quality of products. The present study examines the influence of erythritol substitution and the addition of hydrocolloids on the physicochemical and sensory properties of custard pudding under refrigeration storage. Four percentages of erythritol substitution (10%, 30%, 50%, and 70%) were compared with control formulation, P1-P4 respectively. Moreover, three other formulations with the percentage of 50% erythritol were prepared along with k-carrageenan and LBG in ratio of 1:1 (H1), 2:1 (H2), and 1:2 (H3). Physical tests were water activity, viscosity, colour, syneresis, and texture profile analysis. Syneresis and texture profile analysis were conducted over 14 days of refrigeration storage, while water activity, viscosity, and colour tests were done on prepared formulations. The sensory evaluation was done using the 9-point hedonic scale and JAR analysis where 75 semi-trained panellists participated. The substitution of erythritol had a significant ($p < 0.05$) effect on syneresis and textural attributes of custard pudding. On the other hand, the incorporation of K-carrageenan and LBG significantly ($p < 0.05$) decreased syneresis, improved water holding capacity, and increased the breaking force and gel strength than erythritol-based samples. There were no statistically significant ($p > 0.05$) differences in overall acceptability of consumers among the different formulations. Nevertheless, 50% erythritol formulation with a 1:1 ratio of K-carrageenan and LBG exhibited the best physicochemical and sensory properties. Thus, it can be concluded that the combination of erythritol, k-carrageenan, and LBG has the potential to be used in the development of lower-sucrose custard pudding while maintaining desirable quality attributes.

Keywords: *custard pudding, erythritol, formulation, hydrocolloids, physical analysis, sensory evaluation, sugar reduction*