Optimization of konjac gel texture prepared with κ-carrageenan and sweeteners and their applications in orange jelly (2014) Advance Journal of Food Science and Technology, 6 (8), pp. 961-967.

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Abstract
This study investigated the effects of konjac proportion in 1% konjac/κ-carrageenan blend (25:75-50:50) and sweetener concentration (sucrose and xylitol at 2-20% and erythritol-sucralose at 0.25-2.5%) on gel strength of konjac gels using Response Surface Methodology (RSM). The statistical analysis revealed that all models of konjac gels with sweeteners were effective and adequate fitted. The most variable affecting gel strength was konjac/κ-carrageenan blend. Quadratic effect of konjac/κ-carrageenan blend was more profound (p<0.001) on konjac gels with each sweetener. The variation of xylitol and sucrose had a linear effect (p<0.001) and a quadratic effect (p<0.05) on gel strength, respectively, while an increase in erythritol-sucralose had no significant effect. Also, the interaction between the two variables had no significant effect on gel strength. The optimal conditions for the highest gel strength were 1% konjac/κ-carrageenan (39.56:60.44) with 9.58% sucrose, 1% konjac/κ-carrageenan (39.87:60.13) with 2% xylitol and 1% konjac/κ-carrageenan (38.18:61.82) with 0.94% erythritol-sucralose. Orange konjac jellies made with three optimal conditions showed no significant differences in appearance and color. Most panelists preferred sweet and texture of the jelly with erythritol-sucralose than that with xylitol. Nevertheless, the jelly with sucrose significantly received the most scores of sweet and overall acceptance. The appropriate level of texture and sweet was evident on the jelly with sucrose, followed by that with erythritol-sucralose and xylitol, respectively. © Maxwell Scientific Organization, 2014.

Author Keywords
Biopolymers; Gel formation; Konjac; Response surface methodology; Sugar substitutes

References
- Akesowan, A.
- Akesowan, A.
- Alizadeh, M., Azizi-Lalabadi, M., Kheirouri, S.
- Anderson, M.J., Whitcomb, P.J.
- Bayarri, S., Izquierdo, L., Durán, L., Costell, E.
- Chin, K.B., Keeton, J.T., Longnecker, M.T., Lamkey, J.W.
- Cochran, W.G., Cox, G.M.


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