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Abstract

Hydrogel complexes formed by a 1% mixture of konjac flour and secondary gums (k-carrageenan or xanthan) at different ratios between 70:30 and 30:70 were investigated for syneresis and texture stability under multiple freeze-thaw cycles. Increasing of freeze-thaw cycles caused the syneresis generated by all konjac/k-carrageenan gels significantly increased (p<0.05) while their peak force values decreased (p<0.05). As compared with the gels freshly prepared, significant differences (p<0.05) in syneresis and peak force values were found in all konjac-k-carrageenan gels after the first freeze-thaw cycle, in exception of the konjac-k-carrageenan (50:50) gel that showed the most stable gel texture until the end of the second cycle. Konjac/xanthan gels ranged from 70:30 to 50:50 demonstrated increasing syneresis but decreasing peak force values with increasing freeze-thaw cycles. Whilst, no syneresis were found (p>0.05) in the gels formed by konjac/xanthan blends at 40:60 and 30:70, which also maintained their gel texture over the fourth freeze-thaw cycle.

Author Keywords

Freeze-thaw stability; Hydrogel; Konjac flour; Syneresis; Texture characteristic

References


- Sae-kang, V., Suphantharika, M.
Influence of pH and xanthan gum addition on freeze-thaw stability of tapioca starch pastes

Shen, D., Wan, C., Gao, S.
Molecular weight effects on gelation and rheological properties of konjac glucomannan-xanthan mixtures

Šubatić, D., Babić, J., Ačkar, D., Piližota, V., Kopjar, M., Ljubas, I., Ivanovska, S.
Effect of galactomannan hydrocolloids on gelatinization and retrogradation of tapioca and corn starch

Sworn, G.
Xanthan gum
In: Phillips GO, Williams PA, eds., CRC Press. New York, USA

Takigami, S.
Konjac mannan
In: Phillips GO, Williams PA, eds., CRC Press. New York, USA

Thomas, W.R.
Konjac gum

Whistler, R.L., BeMiller, J.N.
(1993) Industrial gums,
3 rd ed. Academic Press. New York, USA

Williams, P.D., Sadar, L.N., Lo, Y.M.
Texture stability of hydrogel complex containing curdlan gum over multiple freeze-thaw cycles

Yuan, R.C., Thompson, D.B.
Freeze-thaw stability of three waxy maize starch pastes measured by centrifugation and calorimetry