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Czech J. Food Sci.

**Babić J., Šubarić D.,
Milicevic B., Ačkar D.,**

Kopjar M., Nedic Tiban N.:

Influence of trehalose, glucose, fructose, and sucrose on gelatinisation and retrogradation of corn and tapioca starches

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The effects of trehalose, glucose, fructose, and sucrose on the gelatinisation and retrogradation properties of corn (CS) and tapioca (TS) starches were studied with differential scanning calorimetry (DSC). The results showed that the sugars affect gelatinisation and retrogradation of both starches, with the effect varying significantly between sugars. The addition of trehalose, glucose, fructose, and sucrose increased the gelatinisation temperatures and enthalpy of gelatinisation of corn and tapioca starches. The extent of increase followed

the order: fructose < glucose < trehalose < sucrose with CS, and fructose < trehalose < sucrose < glucose with TS. The retrogradation studies showed that sugars of lower molecular weights (glucose and fructose) were less effective in the reduction of retrogradation than those of higher molecular weights (sucrose and trehalose). Trehalose retarded retrogradation of both corn and tapioca starches under all conditions investigated. Sucrose had the same effect on the corn starch retrogradation. The effects of other sugars depended on the type of starch, storage period, and storage temperature.

Keywords:

corn starch; tapioca starch; sugars; gelatinisation; retrogradation

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