

Effect of flaxseed gum on the pasting, thermal and rheological properties of rice starch

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Replacement of flaxseed gum at 3, 6, 9 and 12% levels was made in rice starch. The objective of replacement was to modify the starch properties as an alternative to chemical and enzymatic modification. Rapid visco analyzer (RVA), differential scanning calorimeter (DSC), Brookfield rheometer and texture profile analysis were used to investigate the different starch properties. In the presence of flaxseed gum, peak and final viscosities were increased significantly as compared to plain rice starch. Although there was no significant difference in the pasting time of different starch mixtures, but the pasting temperature was decreased in the presence of gum. The DSC data of different blends showed that peak temperature increased as the level of flaxseed gum was increased. This can be attributed to the slower gelatinization of starch in the presence of gum. ΔH (J/g) of starch blends decreased linearly as a function of gum due to less starch with higher gum replacement. Data obtained from Brookfield rheometer demonstrated as an increase in shear stress as a function of shear rate. Although, all the blends showed pseudoplasticity of system ($n < 1$) but it was higher at 3, 6 and 9% gum levels, respectively. Overall, it can be assumed that flaxseed gum has helped to modify the starch by increasing peak and final viscosities, increasing peak temperature and improving pseudoplasticity of the system.

Key words: Rice, starch, Flaxseed gum, RVA and DSC

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