Effect of glycerol on the physicochemical properties of cereal starch films

ABSTRACT

The physical properties of corn, wheat and rice starch edible films with different level of glycerol were evaluated**.** Starch films exhibited an apparent endothermic peak in the range of 151–199°C with corn starch film with 1.6% glycerol having a relatively lower T_o and higher T_p. X-ray diffraction spectroscopy indicated that the corn, wheat, rice starch powders had ~ 39–49% crystallinity, whereas Fourier transform infrared spectra showed peaks associated with the tightly bound water present in the rice, corn, wheat starches. Overall, glycerol addition could enhance the water vapour pressure barrier properties of the films, but their tensile strength was reduced. Corn starch films were identified as the most suitable choice for edible packaging as its thermal characteristics indicated suggested a more acceptable sealability. Rice starch films is proposed as the better choice for coating as it showed better flexibility as indicted by lower tensile and higher elongation properties.

Keyword: Edible coting; Edible film; Plasticizers; DSC