**Development and characterization of fish gelatin/oxidized starch double network edible film catalysed by thermal treatment and Schiff’ base reaction**

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The properties of fish gelatin (FG) film were improved via kinetically controlled formation of crosslinking hetero-covalent linkages with oxidized starch (OS) based on the Schiff’ base reaction and forming interpenetration double network structure via thermal treatment. Glycerol was supplied as the plasticizer. The effects of different ratios of FG/OS (ranging from 10:1 to 2:1) on the barrier performance (water, oil and oxygen), transmittance, fresh-keeping performance et al. of films were investigated. With the increasing concentration of OS, the moisture content, water vapor permeance, oil and oxygen permeability decreased evidently, followed by slight improvement. It could be inferred that the incorporation of OS increased the barrier performance of the composite films and the optimum concentration was obtained at the loading amount of 1.5% OS. The water vapor permeance, oil permeability, and oxygen permeability of 5% FG/1.5% OS composite film were 3.64 gcm-1d-1MPa-1, 0.88 gm-2h-1, and 10.98 cm3/m2d·0.1MPa, respectively. FTIR spectra revealed new peak in 1157 cm-1 in the complex films meaning the hetero-molecular crosslinking between FG and OS. Moreover, complex films had superior preservation effect on fresh-cut apples, according to the results of weight loss, total soluble solids, and chromatism values. Therefore, this study suggested that FG/OS complex film has great potential to be supplied as novel material for edible packaging applications.