

Interaction and fragility study in salmon gelatin-oligosaccharide composite films at low moisture conditions

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© 2019 Elsevier Ltd Non mammalian gelatin under low moisture conditions could potentially be used in encapsulation technologies in food and pharmaceutical applications. This work explored the interactions between salmon gelatin (SG) and different molecular weight oligosaccharides (at 0.2, 0.4, 0.6 wt fraction) with 75% moisture content. SG and glucose, sucrose and maltodextrin were combined to produce visually transparent composite films. Fourier-transformed infrared spectroscopy showed that changes in secondary structure towards a less ordered configuration occurred upon increasing oligosaccharides weight fraction. This interaction was identified as physical in nature and possibly sustained by hydrogen bonding between components. The oligosaccharides also reduced water sorption as indicated by Guggenheim, Anderson and de Boer monolayer parameters derived from dynamic vapour sorption data. This reduction was higher for glucose, possibly due to reduction in free volume in the composite