Preparation and physical properties of cross-linked chitosan-based films using various additives

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In this study, biodegradable films are prepared by using chitosan (CS), polyvinyl alcohol (PVA), additives, and sulfosuccinic acid (SSA) as a crosslinkage agent. Glycerol (GL), xylitol (XL), and sorbitol (SO) were used as additives. The physical properties, water vapor absorption, thermal analysis, optical physical properties, and biodegradability of the prepared crosslinked chitosan-based films were measured. In addition, with SSA contents (0-30%), heat curing time and temperature, the physical properties for the films were investigated. The results indicate that the films cured at 120 ℃ for 2 hr possess higher physical and thermal properties compared to that of non-cured films. The mechanical, thermal and water barrier properties of SO-added film are also found to be superior to other films with GL and XL. The degree of biodegradability revealed that the films are degraded by about 50% after 100 days.