

Physical properties and biodegradability of heat cured biodegradable films by adding aspartame and aspartic acid as an alternative additives

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In this study, heat cured biodegradable films are prepared by using chemically modified starch (RS4), polyvinyl alcohol (PVA), and additives. Aspartame (APT), aspartic acid (APA), glycerol (GL), and citric acid (CA) were used as additives. Chemically modified starch (RS4) using potato starch (PS) was synthesized by using sodium trimetaphosphate (STMP) and sodium tripolyphosphate (STPP) as a crosslinker. Then, the degree of crosslinkage (RS level) was investigated by using the pancreatin-gravimetric method, swelling power and an X-ray diffractometer (XRD). The physical properties, water vapor absorption, thermal analysis, optical physical properties, and biodegradability of the prepared biodegradable films were measured. The results indicate that the mechanical, thermal and water barrier properties of APT-added film are found to be superior to other films with various additives (APA, GL, and CA). The degree of biodegradability revealed that the films are degraded by about 40-80% after 170 days.