

Tapioca starch films reinforced with microcrystalline cellulose for potential food packaging application

ABSTRACT

This work is directed towards developing biodegradable films from biopolymer that is sustainable and environmentally friendly particularly tapioca starch (TPS) films. However, the usage of TPS films for food packaging application has been limited due to the poor mechanical, barrier and thermal properties. Microcrystalline cellulose (MCC) at different concentrations (0 to 10 wt.%) was incorporated as the filler into the films to form TPS/MCC composite films via solvent casting method in order to improve the limited properties of the films. The TPS/MCC films were characterized in terms of physical, mechanical, barrier, and thermal properties. It was found that 3 wt.% MCC was the ideal concentration of filler that resulted to the highest performance of the films in terms of mechanical and barrier properties. Thermal properties of the films were also improved with the addition of MCC into the films. In conclusion, TPS/MCC films produced in this study exhibit improved properties and have the potential to be used for food packaging application.

Keyword : Barrier property; Food packaging; Mechanical property; Microcrystalline cellulose; Tapioca starch; Thermal property.