

Effects of palm wax on the physical, mechanical and water barrier properties of fish gelatin films for food packaging application

ABSTRACT

Fish gelatin films added with different palm wax (PW) concentrations (0–60%) were analysed for the physical, mechanical, microstructural and water resistance properties. The results showed that the gelatin/palm wax (GP) films with higher PW concentration were thicker, opaquer, less stiff and more flexible than the control films. The tensile strength of the GP film significantly ($p < 0.05$) increased with the incorporation of 15 % PW but decreased when higher concentration of PW was added. The incorporation of PW with increasing concentrations significantly ($p < 0.05$) reduced the films' solubility and swelling. Similarly, the 15 % GP films also had a significantly ($p < 0.05$) lower water vapour permeability and higher contact angle than control film. The GP films added with 15 % PW showed the best improvement on its UV barrier, mechanical and water resistance properties if compared to control. In conclusion, the incorporation of PW resulted to enhance physical and water barrier properties of fish gelatin films.

Keyword: Gelatin film; Palm wax; Hydrophobic film; Biodegradable packaging