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Radiation Grafted Antimicrobial Film for Advanced Active Packaging Application

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Low density polyethylene (LDPE) film was grafted with sorbic acid (SA) using radiation induced grafting (RIG) technique to develop advanced antimicrobial grafted film for active packaging application. Instead of mixing antimicrobial additive as food additive directly with food, this additive was incorporated in films via RIG and allow the functional effect at the food surface, whereby the microbial growth is mostly found. Therefore, removal or reduction of preservatives from food formulate with non-migrate additives increases food safety and meet consumer demands for fresher food. The evidences of sorbic acid (SA) grafting film were studied using Grazing-angle Fourier Transform Infra-red Spectroscopy (GA-FTIR), Field Emission Scanning Electron Microscope (FESEM), Atomic Force Microscopy (AFM) and X-Ray Photoelectron Spectroscopy (XPS). The antimicrobial properties of LDPE film functionalized by sorbic acid were evaluated with respect of its mechanical properties and surface properties. The analysis of fungi killing time during storage of freshly baked bread packed in grafted shows a significant antimicrobial efficacy on food indicating the potential of grafting of this active agent on a LDPE film instead of adding it in the food itself.

Country/Organization invited to participate

Malaysia

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