

Abstract

A polyethylene based packaging material containing nano-Ag, nano-TiO₂, nano-SiO₂, and attapulgite has been prepared. The effect of nanocomposite packaging material (Nano-PM) on the senescence of *Flammulina velutipes* during 15 days of postharvest storage at 4 °C and a relative humidity of 90% were analyzed. The results showed that compared with normal packaging material (Normal-PM) and no packaging (No-PM), Nano-PM improved the appearance quality, reduced weight loss and cap opening. The degree of maturity and increase in molecular weight of *F. velutipes* polysaccharides (FVP) were delayed. The content loss of proteoglycan protein was less and degree of oxidation was lower. The storage with Nano-PM reduced the fibrosis of texture, cellulase activity, the accumulation of hydrogen peroxide (H₂O₂) and superoxide radical (O₂•⁻) by 18.9%, 48.3%, 26.6% and 27.8%, respectively ($P < .05$). The Nano-PM effectively delayed the postharvest senescence of *F. velutipes*, hence prolonged its shelf life and increased its preservation quality.