

Abstract

Project Code :	TRG5780244
Project Title :	Effect of silver nanoparticles-longkong peel extract coating on quality of Longkong
Investigator :	Dr. Intira Lichanporn
E-mail Address :	intira_l@rmutt.ac.th, lintira@yahoo.com
Project Period :	2 year

Abstract:

Bio-inspired silver nanoparticles were synthesized with the aid of a novel, non-toxic, eco-friendly biological material namely, longkong peel extract crushed, acetone precipitated, air-dried peel powder was used for reducing silver nitrate. Silver nanoparticles were formed when the reaction conditions were altered with respect to pH, LPE content and concentration of silver nitrate mixtures turned yellow at pH 2.0 and when increased to pH 5.0 a dark brown color was observed. The effect of concentration of silver nitrate on nanoparticle synthesis was evaluated. The results indicate that silver nitrate concentration at 0.125 and 0.5 mM had yellow color and darker shades of brown when the silver nitrate concentration ranged between 1.0, 1.5 and 2.0 mM. Effects of concentration of LPE powder on nanoparticle synthesis were also evaluated. The addition of 0.5 1.0 2.0 4.0 or 10.0 mg of LPE had no significant effect on the absorbance but maximums absorbance was at 600 nm. The color of LPEs was obtained. The effects of the concentration of LPE coating on the preservation of raw longkong were measured. Alginate coating was used as a component of SLN-LPE. Longkong was coated with 0, 0.5, 1.0, 2.0, 4.0 and 10.0 mg SLN-LPE and then stored at 13°C and 90-95% relative humidity for 9 days. Every 3 days, longkong samples were analyzed for changes in browning, weight loss and chemical quality. It was established that alginate coating as a SLN-LPE maintained the quality of longkong. The best results were obtained with SLN-LPE concentrations of 1.0 and 2.0 mg, longkong showed the lowest range of browning, weight loss and activities of POD and PPO compared to the control fruit. The total phenolic content of longkong coating with 1.0 and 2.0 mg SLN-LPE was higher than that of the control. However, Longkong coating with

Abstract

Project Code :	TRG5780244
Project Title :	Effect of silver nanoparticles-longkong peel extract coating on quality of Longkong
Investigator :	Dr. Intira Lichanporn
E-mail Address :	intira_l@rmutt.ac.th, lintira@yahoo.com
Project Period :	2 year

Abstract:

Bio-inspired silver nanoparticles were synthesized with the aid of a novel, non-toxic, eco-friendly biological material namely, longkong peel extract crushed, acetone precipitated, air-dried peel powder was used for reducing silver nitrate. Silver nanoparticles were formed when the reaction conditions were altered with respect to pH, LPE content and concentration of silver nitrate mixtures turned yellow at pH 2.0 and when increased to pH 5.0 a dark brown color was observed. The effect of concentration of silver nitrate on nanoparticle synthesis was evaluated. The results indicate that silver nitrate concentration at 0.125 and 0.5 mM had yellow color and darker shades of brown when the silver nitrate concentration ranged between 1.0, 1.5 and 2.0 mM. Effects of concentration of LPE powder on nanoparticle synthesis were also evaluated. The addition of 0.5 1.0 2.0 4.0 or 10.0 mg of LPE had no significant effect on the absorbance but maximums absorbance was at 600 nm. The color of LPEs was obtained. The effects of the concentration of LPE coating on the preservation of raw longkong were measured. Alginate coating was used as a component of SLN-LPE. Longkong was coated with 0, 0.5, 1.0, 2.0, 4.0 and 10.0 mg SLN-LPE and then stored at 13°C and 90-95% relative humidity for 9 days. Every 3 days, longkong samples were analyzed for changes in browning, weight loss and chemical quality. It was established that alginate coating as a SLN-LPE maintained the quality of longkong. The best results were obtained with SLN-LPE concentrations of 1.0 and 2.0 mg, longkong showed the lowest range of browning, weight loss and activities of POD and PPO compared to the control fruit. The total phenolic content of longkong coating with 1.0 and 2.0 mg SLN-LPE was higher than that of the control. However, Longkong coating with SLN-LPE of all treatment maintained titratable acidity and total soluble solid during storage. These results indicated that SLN-LPE stored at 13°C was a promising approach in inhibiting browning and maintaining the quality of longkong.

Key words: longkong peel extract, silver nanoparticles, coating