

Abstract

The most prevalent reason for the waste of agricultural products at public marketplaces is the spoilage of fresh fruits and vegetables by bacteria. Using the bioactivity of glucose oxidase (GOx), we envisioned a unique antibacterial method based on producing a thin layer of hydrogen peroxide at the surface of food to increase its shelf life. To make a spraying solution of GOx/AgNPs, the enzyme was immobilised on silver nanoparticles and then suspended in a buffer. The enzyme was isolated from *Aspergillus Niger*. Analyses performed after immobilisation demonstrated that the immobilised enzyme was more active than the free enzyme. The guava fruit was treated post-harvest with a GOx/AgNPs spray. After ten days of storage at room temperature, both the control and treatment groups were assessed based on a set of predetermined quality standards. When compared to the control group, fruits treated with GOx/AgNPs spray exhibited substantial reductions in weight, total soluble solids (TSS), and DPPH free radical scavenging activity during storage. Producers may take advantage of GOx/AgNPs since it is a great platform for increasing the postharvest stability of guavas.