

عنوان مقاله:

Selenium nanoparticle treatments alleviate chilling injury and preserve the quality of Valencia orange fruit during cold storage

محل انتشار:

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خلاصه مقاله:

The study investigated the effect of selenium nanoparticles on chilling injury and improving the shelf life of Valencia orange (*Citrus sinensis*) fruit. The experiment used concentrations of 0.5 and 1 mgL<sup>-1</sup> selenium nanoparticles, with three replicates per treatment and six repetitions overall. Statistical analyses were performed using SPSS, with data analyzed by one-way ANOVA and mean separations by Duncan's new multiple-range test. The results showed that samples treated with Selenium at 0.5 and 1 mgL<sup>-1</sup> significantly decreased lipid peroxidation (55 and 62%, respectively) compared to control samples. Selenium treatment also increased the activity of antioxidant enzymes, including CAT (twice and four times), peroxidase (2.5 and 4 times), APX (about 0.5 and 2.5 times), and SOD (by 4 and 6 times), with consistent results in DPPH radical scavenging (by 2.5 and 3.5 times) in orange fruit. Selenium at both concentrations effectively reduced the incidence of chilling injury in Valencia orange fruit during six months of storage at 3 °C, with the best effect at 1 mgL<sup>-1</sup>. This study proves that selenium can enhance orange fruit quality and increase its tolerance to cold storage conditions, potentially leading to Selenium-enriched fruits with health benefits for consumption.

کلمات کلیدی:

chilling injury, Lipid peroxidation, orange, oxidative stress, Selenium nanoparticle

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