

# Combination effects of calcium chloride and nano-chitosan on the postharvest quality of strawberry (*Fragaria x ananassa* Duch.)

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## Abstract

This study aimed to investigate influences of calcium chloride ( $\text{CaCl}_2$ ) concentrations combined with nano-chitosan coating on the quality of strawberry during postharvest storage. The fruit were dipped in different concentrations of calcium chloride (1 %, 2 %, 3 %, 4 %) before being coated with 0.2 % nano-chitosan. Physico-chemical analysis including the overall quality index, weight loss, firmness, titratable acidity, total soluble solid, l-ascorbic acid content, antioxidant capacity, total phenolic content, total anthocyanin content, and malondialdehyde content were performed in 3 d intervals until fruit became unmarketable. Among six examined treatments, a combination of 3 %  $\text{CaCl}_2$  and nano-chitosan (NCTS) was the most effective one as maintaining the highest score of overall quality index of strawberry stored at 4 °C up to 15 d. The treatment also significantly reduced weight loss, preserved l-ascorbic acid, total anthocyanin contents, antioxidant capacity, and retarded malondialdehyde production. The scanning electron microscope image showed a smooth surface of strawberries coated with 3 %  $\text{CaCl}_2$  combined 0.2 % nano-chitosan. There has no bitterness detected in the treated strawberries after being stored 15 d at 4 °C. The major volatile compounds determined in the initial day were remained until the 15th d of storage.