

Exogenous nitric oxide reduces postharvest anthracnose disease and maintains quality of custard apple (*Annona squamosa* L.) fruit during ripening

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Abstract

Custard apple is the most delicious fruit of tropical and subtropical areas. The storage life of custard apple is very limited due to fast ripening and attack of several diseases after harvesting. Anthracnose caused by the fungus *Colletotrichum gloeosporioides* is the most damaging postharvest disease of custard apple. The effects of postharvest nitric oxide (NO) treatment on anthracnose disease and quality of custard apple were investigated in this study. The fruit were dipped in 50, 100 and 200 μM sodium nitroprusside (SNP), the NO-donor compound, and stored for 8 days at 25 °C. The results showed that custard apple treated with 100 μM SNP treatment significantly reduced anthracnose disease incidence (97.25%) and disease severity (92.88%) after 8 days of storage. However, SNP did not exhibit substantial effect on mycelial growth and spore germination of *C. gloeosporioides*. Custard apple treated with SNP effectively reduced weight loss and total soluble solids. SNP treatment retained a higher level of firmness, titratable acidity, ascorbic acid and total phenolics compared to the control fruit. Additionally, the same treatment enhanced DPPH and FRAP antioxidant activities of custard apple. These results indicated that exogenous NO treatment could be a promising approach to increase resistance against fungal pathogens and maintain postharvest quality of custard apple.