Development and application of a pyrogallic acid-based oxygen scavenging packaging system for shelf life extension of peeled garlic

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Scientia Horticulturae 256: 108548. (2019)

Abstract

In this study, an LDPE film was modified by blending with sodium carbonate and coating with 10% and 20% pyrogallic acid. The developed oxygen scavenging film was used to store peeled garlic at room temperature (25 °C) and 5 °C for 30 days over which the quality attributes and package atmosphere were monitored. Oxygen and CO_2 concentration were stabilized much faster in the oxygen scavenger package at low temperature compared to that stored at 25 °C. However, in the control sample, O_2 and CO_2 were not stabilized due to respiration, and O_2 concentration reached0 at day15 of storage. The oxygen scavenger package at both temperatures. Garlic stored in the oxygen scavenger package remained firmer than that in control during storage. The control sample developed yellow coloration during storage; the example in the oxygen scavenger package stored at 5 °C showed a negligible colour change, whereas the package stored at 25 °C show slight yellowish colour after 20 days. Garlic packed with the LDPE/PG 10% and 20% films and stored at 5 °C retained excellent quality until day 30 of storage, whereas garlic stored at 25 °C started deteriorating after day 20.