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Comparative study of quality changes in Lowland Transgenic RNAi*ACO1*(T2) Tomato Fruit during Storage at Ambient and Low Temperature

Najat M. E.[1]*, Maizom H.[2], Zamri Z.[2, 3], Gazala M. Alhdad[4]

[1]Department of Plant, Faculty of Science, University of Misurata, Misurata 4419, Libya
[2] Institute of Systems Biology (INBIOSIS), Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia
[3]School of Bioscience and Biotechnology, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia
[4]Department of Plant, Faculty of Science, University of Sirte , Sirte Libya

Abstract : Tomatoes (*Solanum lycopersicum* L.) are sensitive to the low temperature and easy to be subjected to chilling injury, which causes fruit ripening disorder. This study aimed to investigate the effects of the low temperature on development internal CI symptoms of the wild type and transgenic RNAi *ACO1*-21 tomato fruit during prolonged storage. This study focuses on the efficacy down regulating *ACO1* gene tomato on its quality during the cold storage as comparison to wild type tomato fruit. Tomato fruit was firstly stored at 10° C for 28 days, followed by ripening at 28°C for 10 and 18 days in non-transgenic and lowland transgenic tomato fruit respectively. Chilling injury symptoms such as pitting was observed with more sheet pitting and deeper peel depression in non-transgenic tomato fruit after transferred to ambient temperature (28°C). However, no significant injury and cells were a normal appearance of transgenic RNAi *ACO1*-21 tomato fruit at the same storage conditions. The results also showed that fruit of lowland transgenic RNAi*ACO1*-21 tomato experienced a significant delayed in skin color development, weight loss and reduced firmness loss compared to the non-transgenic tomato fruit. Furthermore, the transgenic RNAi*ACO1*-21 tomato fruit stored at 10 ºC retain shelf life for 18 days at ambient temperature without any spoilage from chilling injury (CI). While, non-transgenic retain shelf life only 4 days. Thus it may be concluded that the Lowland transgenic RNAi*ACO1*-21 able to delay the softening process and further storage at low temperature extended the postharvest life and maintained the quality of the tomato fruit.
Keywords : Transgenic tomato, Storage conditions, Physical quality, Ripening.

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