

Abstract:

We investigated the involvement of stress-induced ethylene in softening of 'Saijo' persimmon fruit with or without removal of astringency by holding the fruit in >95% carbon dioxide for 16h at 25°C, a technique generally referred to as the Constant Temperature Short Duration (CTSD) treatment. 'Saijo' fruit were harvested at commercial maturity from the research farm of Okayama University, Okayama, Japan. In order to confirm the role of ethylene in fruit softening, fruit were treated with 1-methylcyclopropene (MCP), a strong inhibitor of ethylene perception. In the fruit treated with MCP, softening was inhibited markedly compared with non-treated fruit. To test the effects of water stress and CTSD treatment on fruit softening and ethylene production during shelf-life, we held fruits with or without CTSD treatment in high (>95% RH) or low humidity (40-60%) at 20°C. In the fruits without CTSD treatment, high humidity conditions retarded both commencement of ethylene production and fruit softening significantly. However, in CTSD treated fruits, a considerable amount of ethylene was produced and fruit softening proceeded irrespective of humidity. These results indicate that ethylene is involved in fruit softening and that ethylene production is stimulated by not only water stress but also carbon dioxide stress in 'Saijo' persimmon fruit.