

Title Chilling-related injuries in Sai Nam Peung tangerine (*Citrus reticulata* cv. Sai Nam Peung)

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Abstract

Tangerine fruit (*Citrus reticulata* Blanco) cv. Sai Nam Peung is an economically important crop in the Northern Thailand. It has a short growing season and quality rapidly deteriorates when kept at ambient temperature. Therefore, low temperature storage at above 4°C is essential to extending the consumption period. Physiological disorders such as rind pitting, sunken lesions on the peel surface, brown blemish patches and stem-end rind breakdown were visually observed after removed the tangerine from storage. These disorders have been characterized as chilling-related injury (CI) of several *Citrus* fruits, though some symptom developed during storage may not relate to low temperature. In the present study, we have characterized the chilling-related disorder on the peel of Sai Nam Peung tangerine which occurred during storage below critical temperature (3°C) and the severity after transferred the fruits to an ambient temperature. The CI symptoms such as rind pitting, oleocellosis, surface scald were observed on the peel after stored at 3°C for 3 weeks. The severity increased after moved the tangerine fruits to ambient temperature (25±2 0C). The anatomical studied indicated that pitting, oleocellosis and stem-end rind breakdown had variation in affected cell types at different tissues. The breakdown of epicuticular wax, epidermal, hypodermal cells observed under SEM concomitantly with an increase in electrolyte leakage from the peel indicated that these disorders in Sai Nam Peung tangerine were chilling-related injuries.