Title Physiological response to chilling temperature of banana fruit (*Musa acuminata* cv. Dwarf Cavendish)

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Abstract

Bananas are tropical fruits sensitive to chilling injury (CI). The purpose of this study was to evaluate the effect of low temperatures on respiration, ethylene production, 1-aminocyclopropane-1-carboxylic acid (ACC) and malonyl-ACC (MACC) contents, ACC oxidase activity and chilling injury (CI) in bananas. Banana fruits from Canary Islands were stored at 4°C for 1, 3 and 5 days and then rewarmed at 20°C until ripening. Bananas subject to 4°C for 1 day and transferred at 20°C developed slight damage by the end of storage (CI index=0.3), showing dull yellow color on the peel. Neither physiological nor quality parameters were affected. Bananas subjected to 4°C for 3 days presented moderate damage by the end of storage (CI index=2.25). These bananas presented browning on the peel, increase in the production of CO_2, stimulation of ethylene production, increase in ACC oxidase activity and decrease in ACC and MACC contents compared to undamaged bananas. Bananas subjected to 4°C for 5 days developed severe damage to the peel by the end of storage (CI index=3). Several chilling turns the peel brown to black and presented abnormal ripening.