Title	Effect of exogenous ethylene treatment on polyphenoloxidase activity and total phenols in Kent and Keitt mangoes
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Abstract

Despite Mexico being the main exporter of mango in the world, a large proportion of the total production of this fruit is still used for industrial processing. Exposure to atmospheres containing ethylene has proven to accelerate and homogenize the stage of ripening of mangoes, thus handling and storage costs may be reduced. In previous experiments, this type of treatment has induced flesh darkening and the responsible compounds are thought to be phenols which are oxidized by polyphenoloxidase. The purpose of this work was to study the effect of ethylene exposure on polyphenoloxidase activity and phenolic compounds content in two mango varieties used for processing. Kent and Keitt mangoes in their physiological maturity stage were heat-treated in hot water according to the USDA-approved procedure based on fruit weight (46 °C, 85 min). Mangoes were placed inside sealed chambers with atmospheres containing 0, 100, 500 or 1000 μL/L ethylene at 25 °C for 18 h (treatment ER) and stored for 4 days at 13 °C and the for 5 days at 25 °C. Another group of mangoes was stored at 13 °C for 4 days then treated with the same ethylene atmospheres and allowed to ripen for 5 d at 25 °C (treatment RE). Triplicate analyses were made of total phenolic compounds and polyohenoloxidase activity during the whole treatment and ripening processes. Ethylene caused the gradual disappearance of phenolic compounds after 4 days of refrigerated storage and 1 day of ripening and no differences were found at day 5 of ripening in Kent mangoes. For Keitt mangoes treatments with either 500 or 1000 μL/L ethylene kept the concentration of phenolic compounds low during the whole ripening period. In both varieties ethylene exposure increased polyphenoloxidase activity. Ethylene treatment of the two varieties tested could be responsible for darkening of mango products such as juices and nectars due to increased polyphenoloxidase activity since there are no apparent substrate limitations for the oxidative reaction.