Title Effects of ethylene and 1-methylcyclopropene (1-MCP) on lignification of postharvest bamboo shoot

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Abstract

The effects of 1-methylcyclopropene (1-MCP) and ethylene on quality and lignification of postharvest bamboo shoot (*Phyllostachys praecox* f. *prevernalis.*) were examined during storage at 20 °C. Disease incidence and respiration rate of control bamboo shoot increased, while total sugar (TS) content decreased quickly. Reducing sugar (RS) content and ethylene production increased at first and then decreased quickly. Increased shoot firmness after harvest was positively correlated with higher lignin and cellulose contents. Accumulation of lignin in flesh tissue was also positively correlated with activities of phenylalanine ammonia lyase (PAL), cinnamyl alcohol dehydrogenase (CAD) and peroxidase (POD). Ethylene treatment enhanced firmness, respiration rate and ethylene production increase, promoted TS decrease, but retarded disease incidence. 1-MCP treatment resulted in lower firmness, higher disease incidence and TS content, inhibited respiration rate and ethylene production, delayed the activities of PAL, CAD and POD, and retarded lignin and cellulose accumulation. The present findings show that ethylene is involved in bamboo shoot lignification, and suggest that 1-MCP could be used commercially to control this important postharvest physiological disorder in bamboo shoot.