

Title The effects of 2, 5-norbornadiene on physiological and biochemical responses of fresh-cut winter squash during storage

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Abstract

Ethylene was one of the most important plant hormones that regulate physiological responses, maturity and senescence of postharvest fruits and vegetables. The determination of its role in the wound-healing response of fruits and vegetables is significant in understanding the wound response. 2, 5-Norbornadiene (NBD), inhibitor ethylene binding were used to determine the effect of ethylene action on wound-induced response of fresh-cut winter squash, a kind of vegetables known to produce ethylene markedly after cutting. The effect of NBD on the physiological and biochemical changes of fresh-cut winter squash during storage was investigated in this experiment. The results showed that NBD had significantly effects on metabolism of fresh-cut winter squash. Ethylene production was inhibited when NBD was in low concentration, and high concentration of NBD induced ethylene production. NBD also have an inhibition effect on polyphenol oxidase (PPO), peroxidase (POD) and Phenylalanine ammonia lyase (PAL) activity. The effect of NBD on lipoxygenase (LOX) activity and superoxide dismutase (SOD) was not obvious. NBD treated sample showed a more rapid increase in catalase (CAT) activity, which may help in healing the damage of the tissue. This information is important in understanding the fundamental biology of wound response and in the development of new technology to hasten wound-healing and, thereby, to minimize costly wound-related problems in fresh-cut industry.