

Effect of CPPU on postharvest attributes of Chinese flowering cabbage during storage

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Abstract

Chinese flowering cabbage is an important cultivated leafy vegetable. Experiments were conducted to test the effect of exogenous application of N-phenyl-N-(2-chloro-4-pyridyl) urea (CPPU) as a cytokinin analogue on postharvest attributes of Chinese flowering cabbage during storage at low temperature. The results revealed that CPPU treatment significantly delayed the de-greening of Chinese flowering cabbage. The treatment reduced the H₂O₂ accumulation, O₂⁻ production rate and malondialdehyde content, maintained membrane permeability and delayed the decrease in the contents of total unsaturated fatty acids. Meanwhile, the deficiency of energy status referred to the ATP level and energy charge in relation to the expressions of energy-related genes of Chinese flowering cabbage was slowed down after CPPU treatment. Furthermore, the decreases in the contents of chlorophylls, the transcript levels of chlorophyll catabolic genes *BrPAO1*, *BrPPH1*, *BrSGR1* and *BrNYC1* and senescence associated genes *BrSAG12* and *BrSAG19* were markedly suppressed. These results exhibited that exogenous application of CPPU efficiently retarded the oxidative damage of membrane integrity, helped to maintain the energy status, slowed down the rapid degradation of chlorophylls and, thus, delayed the leaf senescence of Chinese flowering cabbage during storage, which suggested that the application of CPPU might be as a postharvest handling for quality maintenance and shelf life extension of leafy vegetables.