

# Exogenous procyanidin treatment delays senescence of harvested banana fruit by enhancing antioxidant responses and in vivo procyanidin content

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## Abstract

Banana fruit has high nutritional value and is consumed worldwide. However, rapid senescence shortens the storage time of harvested banana fruit after ripening. Procyanidins (PAs) are excellent antioxidants, but their effects on harvested fruit are obscure. Here, we explored the effects of exogenous PAs on senescence in banana fruit. Notably, a 1% PA solution delayed senescence of banana fruit, as demonstrated by reduced decrease in pulp firmness, peel color changes, and total soluble solids accumulation in pulp. Reactive oxygen species levels, malondialdehyde content, and relative conductivity rates in peels were significantly decreased, whereas superoxide dismutase, catalase, and peroxidase activity and expression were enhanced by PA treatment. The DPPH<sup>\*</sup> scavenging activity in peels of PA-treated fruit was also enhanced, and in vivo PA contents in the peel and pulp were induced by PA treatment. Overall, PA-dependent delayed senescence could help maintain the freshness of harvested banana fruit.