

Preharvest salicylic acid treatments improve phenolic compounds and biogenic amines in ‘Niagara Rosada’ table grape

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Abstract

The ‘Niagara Rosada’ (*Vitis labrusca*) grape is widely consumed for its nutritional qualities and flavor, in addition to presenting a great diversity of phytochemical compounds, mainly polyphenols. ‘Niagara Rosada’ has a limited shelf life, especially when kept at room temperature, a common form used by markets in Brazil. Salicylic acid (SA) is a low-cost alternative postharvest technique, due to its accessibility (low cost) and potential to mitigate postharvest losses, in addition to maintaining quality. Exogenous application of salicylic acid in the pre-harvest period was studied to improve the postharvest quality of ‘Niagara Rosada’ grapes with the aim of increasing its shelf life. SA was applied in different doses, in two stages during the pre-harvest, in the season of berry growth and during veraison. The results show that 1 and 2 mmol L⁻¹ were efficient in reducing the incidence of berry drop and decay of berries. Treatments with SA provided an increase in phenolic compounds. Among the phenolic acids, there was an increase in chlorogenic acid and gallic acid, related to antifungal action. Regarding polyphenols, rutin, cyanidin-3,5-diglucoside and 3-O-glycosidic delphinidin were the major compounds found in all treatments. Salicylic acid induced an increase in serotonin and melatonin content, as well as in the aminoacids (tryptophan and 5-hydroxytryptophan). During the storage, there was a decrease in histamine and dopamine levels. These alterations may be used as a tool to induce fruit resistance during storage, leading to an increase of crop yields. Thus, exogenous treatment using 1 and 2 mmol L⁻¹ SA increases postharvest life, improves biochemical quality of the musts and induces increased antioxidant compounds.