Post-harvest fungal occurrence on commercial strawberry cultivars grown in Australia: impact of phytochemical composition

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Abstract

The aim of this study was to isolate and identify the spoilage fungi from four Australian grown commercial strawberry cultivars, namely Fortuna, Festival, Ruby Gem, and Red Rhapsody, and to investigate their correlation with the studied physicochemical properties in all four cultivars. To further understand the differences in postharvest resistance behavior of strawberries, the correlation between chemical composition, in particular pelargonidin-3-glucoside (the major anthocyanin in strawberry), and fungal decay was studied. Results showed significant differences in (poly) phenolic content between the four investigated cultivars, in particular total phenolics and pelargonidin-3-glucoside. Moreover, the studied strawberries significantly varied ($p < 0.05$) in other evaluated parameters such as pH, sugars, and ascorbic acid. The Red Rhapsody cultivar with higher contents of total phenolics and pelargonidin-3-glucoside exhibited higher resistance to fungal growth, which was further confirmed by the results of principal component analysis. Findings from this study could benefit the food industry through lessening postharvest spoilage by breeding strawberries with higher polyphenolic content.