

Title Putative role of antioxidant activity of high pigment tomato cultivars in resistance against *Botrytis cinerea* post-harvest infection

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Citation ISHS Acta Horticulturae 914:429-432.2011.

Keywords lycopene; carotenoids; grey mold; *Botryotinia fuckeliana*; reactive oxygen species; ROS scavenger; *Lycopersicon esculentum*

Abstract

Grey mold caused by the fungus *Botrytis cinerea*, an amorphic form of *Botryotinia fuckeliana*, represents one of the main causes of decay in harvested tomatoes. Many studies revealed that fungal infection is associated with enhanced reactive oxygen species (ROS) generation. Therefore, ROS scavengers and antioxidant compounds were proposed to limit mycelia colonization in advancing of the plant tissue. Tomato fruit is a significant source of tetraterpenic antioxidants, such as carotenoids, including lycopene that is the most efficient antioxidant in the pulp. In this study, seven commercial “high pigment” (HP) cultivars of tomato were studied for fruit response to grey mold disease due to an artificial post-harvest inoculum of *B. cinerea* conidia suspension. A traditional red (no HP) and a yellow genotype were used as reference control. Moreover, antioxidant activity and total carotenoids content in the berries were measured. Carotenoids content was well co-related better with I-AA than with S-AA. Pathogenicity assay showed a clear separation among same HP cultivars and controls. In particular, the yellow genotype resulted with higher levels of disease severity. Moreover, comparing all results, carotenoids content, S-AA and I-AA were resulted negatively related to *Botrytis* disease severity measured between the cultivars considered. This evidence showed the potential of HP tomato genotypes to constitute an important source of carotenoids for diet. Moreover, with regard to grey mold, the results confirmed the putative role of the antioxidant compounds in post-harvest tomato resistance.