

EFFECT OF UV-B DEPLETION ON FLAVONOID CONTENT AND FLAVONOID BIOSYNTHETIC GENE EXPRESSION IN FLESH AND PEEL OF WILD TYPE AND *hp-1* TOMATO FRUITS DURING RIPENING

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Flavonoids are a class of plant polyphenols that comprises up to 5000 different molecules, many of which have shown to be useful for human health. In plants, generally, they are ascribed to have an important role in plant defense, especially to ultraviolet radiation.

Tomato is an important crop which is worldwide cultivated and eaten. It is the source of some health-beneficial secondary metabolites. The most represented ones are carotenoids but tomato fruit has proven a modest source of flavonoids too, especially in peel.

Little is known about the possibility of enhancing flavonoids in tomato fruits by modulating light quality instead of biotechnological approaches and, therefore, aim of this study was to evaluate the effect of ultraviolet B radiation depletion on the expression of some genes involved in flavonoid biosynthesis and on the accumulation of some flavonoids in two tomato genotypes.

Wild type and mutant *hp-1* tomato plants were grown until complete fruit ripening under two different light conditions: whole sunlight spectrum and sunlight spectrum deprived of the UV-B region (280-320 nm). Flesh and peel of fruit were harvested at three different ripening stages and samples analyzed to evaluate the influence of the genotype and UV-B depletion on the flavonoid content and the expression of some flavonoid structural and regulatory genes.

Our analyses indicate that the *hp-1* mutation enhances flavonoid gene expression and accumulation both in flesh and peel. However light quality differentially affects the content of the phenolics analysed and the expression of some of the biosynthetic genes in the two tissues during the ripening process.