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## **Ozone-induced changes in the content of bioactive compounds and enzyme activity during storage of pepper fruits**

### **Abstract**

This paper presents for the first time the results of investigations concerning the effect of treatment of whole pepper fruits with gaseous ozone and the refrigeration storage period conditions on pepper quality. The effects are reflected in changes in the flavonoid contents, the antioxidant activity of the phenolic compound fraction and the enzymes involved in phenylpropanoid metabolism.

The investigations were carried out on a hot pepper fruit cultivar, Cyklon. It was found that the levels of a majority of flavonoids, in particular those of quercetin 3-*O*-rhamnoside and quercetin 3-*O*-rhamnoside-7-*O*-glucoside increased in the pericarp of fruits treated with ozone for 3 hours and stored for 20 days (by 25% relative to the control). Simultaneously, reduced phenylalanine ammonia-lyase and tyrosine ammonia-lyase activity were noted, which implies slight degradation of enzymes caused by the ozone treatment and enhancement of the polyphenol oxidase and guaiacol oxidase activity involved in response to increased oxidative stress.

**Keywords:** *Capsicum annuum*; ozonation; phenolic compounds; antiradical activity; enzymes

### **1. Introduction**

In recent years, there has been a growing interest in research findings concerning the limitations of the use of pesticides in food production as well as the development of environmentally friendly physical or chemical plant protection agents. The methods for decontamination based on formulations that are readily decomposed into simple and harmless chemical substances are noteworthy (EPA, 1999). The ozonation technique, which extends the shelf life of stored raw fruit and vegetables (Abdel-Wahhab et al., 2011), is now being comprehensively studied. Gaseous ozone is also used to reduce accumulation of volatile substances, i.e., propene or acetylene, which cause adverse premature fruit ripening (Skog &

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