

# Strawberries inoculated after hypobaric treatment exhibit reduced fungal decay suggesting induced resistance

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## Abstract

Fungal rot is one of the main postharvest problems that limits the storage life of strawberries. The use of fungicides to control rot has been questioned as a sustainable and safe method. Therefore, the focus of contemporary research for reducing rots has shifted to the application of natural compounds or physical methods. Hypobaric treatment (50 kPa, 4 h) has previously been demonstrated to reduce rot development on strawberries. One potential mechanism for the reduction of fungal rot by hypobaric treatment is the induced defence response in the fruit leading to higher resistance to fungal attack. To further investigate the likelihood of induced resistance, strawberries were inoculated with spores of *Botrytis cinerea* and *Rhizopus stolonifer* 0, 6, 12, 18 and 24 h after hypobaric treatment (50 kPa, 4 h) and compared to non-treated fruit (control). Strawberries inoculated immediately and 12 h after hypobaric treatment had significantly ( $P < 0.05$ ) reduced fungal rot severity in subsequent storage at 20°C over a period of 5-8 days in comparison to control fruit. Meanwhile hypobaric treated strawberry inoculated after 6, 18 and 24 h did not differ from non-hypobaric treated fruit. These results suggest that potential activation of induced resistance in strawberry due to hypobaric treatment peaks immediately and at 12 h post-treatment. To explore the induced resistance mechanism for fungal reduction due to hypobaric treatment, further studies of defence related enzymes and their gene expression is required.