

**Title** Influence of post-harvest technologies applied during cold storage of apples in *Penicillium expansum* growth and patulin accumulation: A review

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### **Abstract**

Apples are a seasonable product and so, it has been necessary to develop strategies to enlarge the life of the product, thus allowing furnishing the market all along the year. The cold storage is the main technology used. However, apple decay by *Penicillium expansum* cannot be completely avoided. Moreover, the attack of *P. expansum* may lead to the accumulation of patulin in apples. Patulin is a mycotoxin whose ingestion may cause serious health problems. Thus, several post-harvest treatments are applied to optimize the effect of low temperatures. The fungicide treatment is the most used. The overuse of fungicides has led to the emergence of fungicide-resistant strains and nowadays, the consumers are more and more concerned about the environmental consequences of the use of chemicals. As a consequence, the search for alternative methods which permit decrease the dose of chemicals or even avoid their use is a matter of concern for both producers and packinghouses. In this review, the effects of some technologies like the use of biocontrol agents and controlled atmosphere on apple decay and patulin accumulation are discussed and compared to conventional technologies.