

Title Effect of biocontrol agents on accumulation of patulin by *Penicillium expansum* in different apple cultivars

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Abstract

Patulin is a secondary metabolite produced by different fungal species attacking food products, such as fruit, vegetables and cereals. The presence of patulin is usually associated with blue mould rot caused by *Penicillium expansum*, a post-harvest pathogen of apples and pears. Chronic health effects of patulin in rodents include genotoxicity, immunotoxicity, and neurotoxicity, while its effects on humans are not yet clear. In many areas, populations of *P. expansum* have developed that are resistant to the few fungicides admitted in the postharvest environment, so that alternative practices, such as biocontrol using antagonistic microorganisms could become important. Different biocontrol agents were evaluated for their capacity to reduce *P. expansum* attacks on apples, and their effect on patulin concentration in the final juice. The parts of the fruit attacked by the pathogen were analysed for patulin content, through extraction with ethyl acetate, purification with SPE columns and HPLC-DAD detection. Experiments were done with different apple cultivars, and cv Golden delicious appeared to be the most susceptible. Trials were carried out in controlled conditions, storing fruits at 20±1°C for 7 days or at 4±1°C for 28 days and later at 20±1°C for 7 days. Some strains of the yeast *Metschnikowia pulcherrima* significantly reduced *P. expansum* development. We will continue to research the mechanisms involved in biocontrol of patulin content.