

Title Effect of biocontrol agents *Candida sake* and *Pantoea agglomerans* on *Penicillium expansum* growth and patulin accumulation in apples

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Abstract

Penicillium expansum is the major responsible of fruit pome decaying in cold storage. Apples spoiled by *P. expansum* are expected to contain patulin, a mycotoxin which is proven to affect human health.

The use of chemicals is the most common procedure to prevent rots in postharvest but legislation is becoming more and more restrictive. The use of biocontrol agents (BCA) as an alternative tool is currently being proposed. The aim of this study was to evaluate the effect of two BCA (*Candida sake* CPA-2 and *Pantoea agglomerans* CPA-1) on *P. expansum* growth and patulin accumulation in cold storage and further deck (ambient) storage.

Wounded apples were inoculated with a cell suspension of either *C. sake* or *P. agglomerans* and with a *P. expansum* conidial suspension. Apples were cold stored at 1 °C until lesion diameter reached 2 or 4 cm. Half the apples of each treatment were further stored at 20 °C for three days before patulin analyses.

Both BCA tested controlled blue rot and patulin accumulation during cold storage. The control of *P. expansum* growth was enhanced in *C. sake* treated apples. On the other side, control of patulin accumulation in *P. agglomerans* treated apples seemed to be more efficient. BCA treatment could not control blue rot and patulin accumulation during further storage at room temperature and in some cases, an increase in *P. expansum* aggressiveness was observed.