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CONTROL AND DEGRADATION OF PATULIN IN APPLES BY PICHIA CARIBBICA AND THE POSSIBLE MECHANISMS INVOLVED

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The efficacy of *Pichia caribbica* in controlling postharvest blue mold and natural decay development of apples and degrading the patulin were investigated. The decay incidence of the blue mold of apples treated by *P. caribbica* was significantly reduced compared with the control samples and the higher the concentration of *P. caribbica,* the better the efficacy of the biocontrol. *P. caribbica* significantly controlled the natural decay development of apples following storage at 20°C for 35 days or 4°C for 45 days followed by 20°C for 15 days. Germination of spores and growth of Penicillium expansum were markedly inhibited by *P. caribbica* in *in vitro* test. Rapid colonization of apple wounds by the yeast was observed in fruit stored at 20°C or 4°C. After incubation with *P. caribbica* at 20°C for 15 days, patulin production by P. expansum in apples was significantly reduced compared with the control. *In vitro* test indicated that *P. caribbica* can degrade patulin directly. Our results suggested that the mechanism of degradation of patulin by *P. caribbica* was not absorption; the presence of patulin can induce *P. caribbica* to produce associated intracellular and extracellular enzymes, both of which have the ability to degrade patulin. The result provides a new possible method that used the enzymes produced by yeast to detoxify patulin in food and feed.

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