

Title

Cellulase activity in tomato fruits infected with *Penicillium funiculosum* Thom.

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Abstract

Within eight days of incubation at room temperature (27°C), tomato (*Lycopersicon esculentum* Mill.) fruits infected with *Penicillium funiculosum* Thom. had deteriorated. Extracts from the infected fruits exhibited cellulase activity. Uninfected fruits lacked cellulase activity. The enzyme was partially purified by a combination of gel filtration and ion-exchange chromatography. On separation by molecular exclusion chromatography, two peaks of absorption with molecular weight estimates of 223,800 Daltons and 89,100 Daltons were obtained. Only the components of the peak with the lighter weight exhibited cellulase activity. The enzyme showed optimum activity at pH 4.5 and 40°C. Na⁺ and Ca⁺⁺ ions stimulated enzyme activity while EDTA and Hg⁺⁺ were inhibitory. The apparent km for the hydrolysis of carboxymethylcellulose was approximately 0.53 mgml⁻¹. The occurrence of cellulase in tomato fruits infected with *P. funiculosum* Thom. and its absence in uninfected fruits suggests a role of this enzyme in pathogenicity of the fungus. Cellulolytic components of the fruits are degraded, the fruits are deteriorated and lost to this post harvest pathogen. Knowledge of the conditions of growth of this fungus and properties of this enzyme will assist the farmer in optimizing production of these fruits and engaging the best conditions for preservation.