

**Title** Overexpression of a gene encoding a catabolite repression element in *Alternaria citri* causes severe symptoms of black rot in citrus fruit

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#### **Abstract**

A gene (*AcCreA*) encoding a catabolite repression element (CreA) with (two zinc fingers of the Cys<sub>2</sub>His<sub>2</sub> type was isolated from the postharvest fungal pathogen *Alternaria citri*. The *AcCreA* overexpression mutant AcOEC2 of *A. citri* showed normal growth on pectin medium and on segments of peel or the juice sac area from citrus fruit. Production of endopolygalacturonase, an essential virulence factor of this pathogen, was similar in AcOEC2 and the wild type in pectin-containing media. However, addition of glucose to the medium showed that carbon catabolite repression of endopolygalacturonase gene (*AcpG1*) expression, as well as endopolygalacturonase production, was lost in AcOEC2. The wild-type strain of *A. citri* causes rot mainly in the central axis of citrus fruit without development of rotting in the juice sac area; however, AcOEC2 caused severe black rot symptoms in both the central axis and juice sac areas. These results indicate that AcCreA-mediated catabolite repression controls the virulence or infection of this pathogen, and that the wild-type *A. citri* does not cause symptoms in the juice sac area due to carbon catabolite repression by sugars in the juice of the juice sac area.