P6.1 Galacturonic acid catabolism in *Botrytis cinerea*

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D-galacturonic acid (GalA) is the major component of pectin, which can be degraded by plant pathogens; GalA potentially is an important carbon source for microorganisms living on decaying plant material. For bacteria, a catabolic pathway of GalA has been described, which consists of five enzymes converting GalA to pyruvate and glyceraldehyde-3-phosphate. A different catabolic pathway is proposed in filamentous fungi. In *Hypocrea jecorina*, GalA is converted to pyruvate and glycerol via D-galacturonate reductase, L-galactonate dehydratase, 2-keto-3-deoxy-L-galactonate aldolase, and glycerol dehydrogenase.

The *Botrytis cinerea* genome contains a D-galacturonate reductase gene (*Bcgaa*A), a L-galactonate dehydratase gene (*Bcgaa*B), and a 2-keto-3-deoxy-L-galactonate aldolase gene (*Bcgaa*C). The three genes were cloned into a protein expression vector and the enzymatic activity was determined for each gene separately. The heterologous simultaneous expression of *Bcgaa*A, *Bcgaa*B, and *Bcgaa*C in an *E. coli ΔuxaC* mutant which cannot grow on GalA is performed to determine whether the catabolic pathway from *B. cinerea* can restore the growth deficiency in *E.coli*. Targeted gene replacement of *BcgaaA, BcgaaB, BcgaaC* or both *BcgaaA* and *BcgaaC* resulted in *ΔgaaA, ΔgaaB, ΔgaaC* mutants and *ΔgaaAC* double knock-out mutants that displayed significantly reduced growth when D-galacturonic acid was used as the sole carbon source. The mutants showed similar virulence as the wild-type stain B05.10 on tomato leaves, indicating that GalA is not the main carbon source for *B. cinerea* growth during infection on tomato leaves. The virulence will be tested on other pectin-rich plants and tissues.