Resistance of *Penicillium expansum* to the SDHI fungicide boscalid and identification of mutations in *sdh* gene

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Blue mold caused by *Penicillium spp.* is considered as the major postharvest disease of apple fruit. Disease control is based on fungicide use, applied either in the orchard or in the packinghouses after harvest. This study was initiated to determine resistance frequency to the SDHI fungicide boscalid in fungal populations originating from apple orchards in Greece and identify mutations in *sdh* gene, associated with resistance to SDHIs.

In total, 260 isolates of *P.expansum* were obtained from fruit collected in different apple growing regions. For sdh gene mutations identification 5 boscalid-resistant and 5 sensitive isolates were selected. The sdhB, C and D subunits were amplified and sequenced.

Sequencing results revealed the presence of 4 different mutations in sdhB (S106L/S175L) and sdhD subunits (L36P/N52I). To confirm the effect of these mutations in the resistance to SDHIs, *sdh* mutants were constructed and fuction analysis was performed. The boscalid-resistant isolates were further characterized in terms of fitness parameters, mycotoxigenic ability and cross-resistance relationships among several SDHIs. The above mentioned data represent the first report of resistance development to SDHIs in field isolates of *P. expansum*, worldwide.

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