Aspergillus niger contains the cryptic phylogenetic species A. awamori - DTU Orbit (18/01/2019)

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Aspergillus section Nigri is an important group of species for food and medical mycology, and biotechnology. The Aspergillus niger ‘aggregate’ represents its most complicated taxonomic subgroup containing eight morphologically indistinguishable taxa: A. niger, Aspergillus tubingensis, Aspergillus acidus, Aspergillus brasiliensis, Aspergillus costaricaensis, Aspergillus lacticoffeatus, Aspergillus piperis, and Aspergillus vadensis. Aspergillus awamori, first described by Nakazawa, has been compared taxonomically with other black aspergilli and recently it has been treated as a synonym of A. niger. Phylogenetic analyses of sequences generated from portions of three genes coding for the proteins β-tubulin (benA), calmodulin (CaM), and the translation elongation factor-1 alpha (TEF-1α) of a population of A. niger strains isolated from grapes in Europe revealed the presence of a cryptic phylogenetic species within this population, A. awamori. Morphological, physiological, ecological and chemical data overlap occurred between A. niger and the cryptic A. awamori, however the splitting of these two species was also supported by AFLP analysis of the full genome. Isolates in both phylospecies can produce the mycotoxins ochratoxin A and fumonisins B2, and they also share the production of pyranonigrin A, tensidol B, funalenone, malformins, and naphtho-γ-pyrones. In addition, sequence analysis of four putative A. awamori strains from Japan, used in the koji industrial fermentation, revealed that none of these strains belong to the A. awamori phylospecies.

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