Aspergillus section Nidulantes (formerly Emericella): Polyphasic taxonomy, chemistry and biology - DTU Orbit (19/12/2018)

Aspergillus section Nidulantes (formerly Emericella): Polyphasic taxonomy, chemistry and biology

Aspergillus section Nidulantes includes species with striking morphological characters, such as biseriate conidiophores with brown-pigmented stipes, and if present, the production of ascomata embedded in masses of Hülle cells with often reddish brown ascospores. The majority of species in this section have a sexual state, which were named Emericella in the dual name nomenclature system. In the present study, strains belonging to subgenus Nidulantes were subjected to multilocus molecular phylogenetic analyses using internal transcribed spacer region (ITS), partial β-tubulin (BenA), calmodulin (CaM) and RNA polymerase II second largest subunit (RPB2) sequences. Nine sections are accepted in subgenus Nidulantes including the new section Cavernicolus. A polyphasic approach using morphological characters, extrolites, physiological characters and phylogeny was applied to investigate the taxonomy of section Nidulantes. Based on this approach, section Nidulantes is subdivided in seven clades and 65 species, and 10 species are described here as new. Morphological characters including colour, shape, size, and ornamentation of ascospores, shape and size of conidia and vesicles, growth temperatures are important for identifying species. Many species of section Nidulantes produce the carcinogenic mycotoxin sterigmatocystin. The most important mycotoxins in Aspergillus section Nidulantes are aflatoxins, sterigmatocystin, emestrin, fumitremorgins, asteltoxins, and paxillin while other extrolites are useful drugs or drug lead candidates such as echinocandins, mulundocandins, calbistrins, varitriols, variecolins and terrain. Aflatoxin B1 is produced by four species: A. astellatus, A. miraensis, A. olivicola, and A. venezuelensis.

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Contributors: Chen, A., Frisvad, J. C., Sun, B., Varga, J., Kocsubé, S., Dijksterhuis, J., Kim, D., Hong, S., Houbraken, J., Samson, R.
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