Chemical characterization of Phoma pomorum isolated from Danish maize

Strains of the genus Phoma are often isolated from various environmental samples including cereals and maize. In the present study we performed a chemical characterization of strains isolated from Danish samples derived from whole plant material collected at harvest. All strains were isolated using a recently developed isolation medium and identified morphologically as P. pomorum. This species is placed in the Phoma section Peyronellaea and strains of other members in this section were also included in the present study. Sequence analysis of the internal transcribed spacer region (ITS) grouped the Danish A pomorum strains with representative P. pomorum strains isolated from other sources. The metabolite production on dichloran Rose Bengal yeast extract sucrose agar (DRYES) was analyzed and the strains were clustered using an in-house Chemical Image Analysis (CIA) program. The resulting tree showed three clusters, one containing all P. pomorum strains, one containing all Epicoccum nigrum strains and finally a large cluster containing strains of the remaining species, which could not be differentiated due to insufficient metabolite production. The separation of A pomorum from the other species resulted mainly from the ability to produce isocoumarins. Several isocoumarins were produced by P. pomorum strains with diaporthinic acid as the predominant analogue, but diaporthin, dichlorodiaporthin, diaporthinol, citreo-isocoumarin, 6-methyl citreo-isocoumarin and citreo-isocoumarinol were also identified. This is the first time that a Phoma species has been reported as a producer of isocoumarins.

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