Pseudomonas protegens sp. nov., widespread plant-protecting bacteria producing the biocontrol compounds 2,4-diacyetylphloroglucinol and pyoluteorin

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Titre Pseudomonas protegens sp. nov., widespread plant-protecting bacteria producing the biocontrol compounds 2,4-diacyetylphloroglucinol and pyoluteorin

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Résumé en anglais Fluorescent Pseudomonas strains producing the antimicrobial secondary metabolite 2,4-diacyetylphloroglucinol (Phl) play a prominent role in the biocontrol of plant diseases. A subset of Phl-producing fluorescent Pseudomonas strains, which can additionally synthesize the antimicrobial compound pyoluteorin (Plt), appears to cluster separately from other fluorescent Pseudomonas spp. based on 16S rRNA gene analysis and shares at most 98.4% 16S rRNA gene sequence identity with any other Pseudomonas species. In this study, a polyphasic approach based on molecular and phenotypic methods was used to clarify the taxonomy of representative Phl+ Plt+ strains isolated from tobacco, cotton or wheat on different continents. Phl+ Plt+ strains clustered separately from their nearest phylogenetic neighbors (i.e. species from the ‘P. syringae’, ‘P. fluorescens’ and ‘P. chlororaphis’ species complexes) based on rpoB, rpoD or gyrB phylogenies. DNA-DNA hybridization experiments clarified that Phl+ Plt+ strains formed a tight genomospecies that was distinct from P. syringae, P. fluorescens, or P. chlororaphis type strains. Within Phl+ strains, the Phl+ Plt+ strains were differentiated from other biocontrol fluorescent Pseudomonas strains that produced Phl but not Plt, based on phenotypic and molecular data. Discriminative phenotypic characters were also identified by numerical taxonomic analysis and siderotyping. Altogether, this polyphasic approach supported the conclusion that Phl+ Plt+ fluorescent Pseudomonas strains belonged to a novel species for which the name Pseudomonas protegens is proposed, with CHA0T (=CFBP 6595T, =DSM 19095T) as the type strain.