Micromonospora schwarzwaldensis sp. nov., a producer of telomycin, isolated from soil.

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Abstract

A Gram-stain-positive, spore-forming actinomycete strain (HKI0641(T)) was isolated from a soil sample collected in the Black Forest, Germany. During screening for antimicrobial natural products this bacterium was identified as a producer of the antibiotic telomycin. Morphological characteristics and chemotaxonomic data indicated that the strain belonged to the genus Micromonospora. The peptidoglycan of strain HKI0641(T) contained meso-diaminopimelic acid, and the fatty acid profile consisted predominantly of anteiso-C15 : 0, iso-C15 : 0, iso-C16 : 0 and C16 : 0. MK-10(H4), MK-10(H2) and MK-10 were identified as the major menaquinones. To determine the taxonomic positioning of strain HKI0641(T), we computed a binary tanglegram of two rooted phylogenetic trees that were based upon 16S rRNA and gyrB gene sequences. The comparative analysis of the two common classification methods strongly supported the phylogenetic affiliation with the genus Micromonospora, but it also revealed discrepancies in the assignment at the level of the genomic species. 16S rRNA gene sequence analysis identified Micromonospora coxensis DSM 45161(T) (99.1 % sequence similarity) and Micromonospora

marina DSM 45555(T) (99.0 %) as the nearest taxonomic neighbours, whereas the gyrB sequence of strain HKI0641(T) indicated a closer relationship to Micromonospora aurantiaca DSM 43813(T) (95.1 %). By means of DNA-DNA hybridization experiments, it was possible to resolve this issue and to clearly differentiate strain HKI0641(T) from other species of the genus Micromonospora. The type strains of the aforementioned species of the genus Micromonospora could be further distinguished from strain HKI0641(T) by several phenotypic properties, such as colony colour, NaCl tolerance and the utilization of carbon sources. The isolate was therefore assigned to a novel species of the genus Micromonospora, for which the name Micromonospora schwarzwaldensis sp. nov. is proposed. The type strain is HKI0641(T) (= DSM 45708(T) = CIP 110415(T)).

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