Kineosporia babensis sp. nov., isolated from plant litter in Vietnam

Sakiyama Y., Thao N.K.N., Giang N.M., Miyadoh S., Hop D.V., Ando K.
NITE Biological Resource Center (NBRC), National Institute of Technology and Evaluation (NITE), Chiba 292-0818, Japan; Institute of Microbiology and Biotechnology (IMBT), Vietnam National University Hanoi (VNUH), Hanoi, Viet Nam

Abstract: Three actinomycetes, designated strains VN05A0342, VN05A0351 and VN05A0415T, were isolated from plant-litter samples collected in the north of Vietnam and examined in a polyphasic taxonomic study. Phylogenetic analysis based on the 16S rRNA gene sequences showed that these isolates were most closely related to the type strain of Kineosporia mikuniensis (98.5% sequence similarity). Morphological properties (the formation of spore domes and motile spores) and chemotaxonomic data supported the assignment of the three isolates to the genus Kineosporia. The isolates all contained the following: meso-diaminopimelic acid in the peptidoglycan (with small amounts of the LL isomer); ribose, mannose, galactose and glucose as the whole-cell sugars; MK-9(H4) as the predominant isoprenoid quinone; C₁₈:₁ and C₁₆:₀ as the major cellular fatty acids; and phosphatidylcholine, phosphatidylglycerol, diphosphatidylglycerol and phosphatidylinositol as the phospholipids. The high DNA-DNA relatedness (>71%) among the three isolates showed that they represented a single species. On the other hand, the DNA-DNA relatedness between the novel isolates and all type strains of Kineosporia species was less than 46%. The physiological properties of our isolates were distinct from those of all of the Kineosporia species with validly published names, e.g. decomposition of L-tyrosine and aesculin and the utilization of raffinose and D-arabitol. Therefore, strains VN05A0342, VN05A0351 and VN05A0415T represent a novel species of the genus Kineosporia, for which the name Kineosporia babensis sp. nov. is proposed. The type strain is VN05A0415T (=VTCC-A-0961T =NBRC 104154T). © 2009 IUMS.

Index Keywords: bacterial RNA; cardiolipin; diaminopimelic acid; fatty acid; galactose; glucose; mannose; peptidoglycan; phosphatidylcholine; phosphatidylglycerol; phosphatidylinositol; phospholipid; quinone derivative; ribose; RNA 16S; Actinobacteria; article; bacterium isolate; chemotaxonomy; gene sequence; Kineosporia babensis; new species; nonhuman; nucleotide sequence; phylogeny; plant litter; priority journal; sequence homology; type strain; Actinobacteria (class); Kineosporia; Micromonospora echinaaurantiaca

Year: 2009
Source title: International Journal of Systematic and Evolutionary Microbiology
Volume: 59
Issue: 3
Page : 550-554
Cited by: 2
Link: Scopus Link
Molecular Sequence Numbers: GENBANK: AB003931, AB003932, AB003933, AB003935, AB025317, AB377116, AB377117, AB377118, AB377119, AY831385, L41048, X77958, X92357, X93190
Chemicals/CAS: diaminopimelic acid, 583-93-7; galactose, 26566-61-0, 50855-33-9, 59-23-4; glucose, 50-
Correspondence Address: Sakiyama, Y.; NITE Biological Resource Center (NBRC), National Institute of Technology and Evaluation (NITE), Chiba 292-0818, Japan; email: sakiyama-yayoi@nite.go.jp
ISSN: 14665026
CODEN: ISEMF
DOI: 10.1099/ijs.0.002907-0
Language of Original Document: English
Abbreviated Source Title: International Journal of Systematic and Evolutionary Microbiology
Document Type: Article
Source: Scopus
Authors with affiliations:
• Sakiyama, Y., NITE Biological Resource Center (NBRC), National Institute of Technology and Evaluation (NITE), Chiba 292-0818, Japan
• Thao, N.K.N., Institute of Microbiology and Biotechnology (IMBT), Vietnam National University Hanoi (VNUH), Hanoi, Vietnam
• Giang, N.M., Institute of Microbiology and Biotechnology (IMBT), Vietnam National University Hanoi (VNUH), Hanoi, Vietnam
• Miyadoh, S., NITE Biological Resource Center (NBRC), National Institute of Technology and Evaluation (NITE), Chiba 292-0818, Japan
• Hop, D.V., Institute of Microbiology and Biotechnology (IMBT), Vietnam National University Hanoi (VNUH), Hanoi, Vietnam
• Ando, K., NITE Biological Resource Center (NBRC), National Institute of Technology and Evaluation (NITE), Chiba 292-0818, Japan
References:
• Ezaki, T., Hashimoto, Y., Yabuuchi, E., Fluorometric deoxyribonucleic acid-deoxyribonucleic acid hybridization in microdilution wells as an alternative to membrane filter hybridization in which radioisotopes are used to determine genetic relatedness among bacterial strains (1989) Int J Syst Bacteriol, 39, pp. 224-229
• Felsenstein, J., Confidence limits on phylogenies: An approach using the bootstrap (1985) Evolution, 39, pp. 783-791
• Saito, H., Miura, K., Preparation of transforming deoxyribonucleic acid by phenol treatment (1963) Biochim Biophys Acta, 72, pp. 619-629
• Willoughby, L.G., A study on aquatic actinomycetes, the allochthonous leaf component (1969) Nova Hedwigia, 18, pp. 45-113
Download: 0290.pdf