Mycobacteria Degrading Polycyclic Aromatic Hydrocarbons

Growing interest in microorganisms capable of degrading environmentally hazardous chemicals had led to the characterization of members of the genus *Mycobacterium* capable of degrading volatile aliphatic hydrocarbons and polyaromatic and chlorinated hydrocarbons. Strains degrading polycyclic aromatic hydrocarbons include *Mycobacterium* sp. strain PYR-1 (1) (= DSM 7251), *Mycobacterium* sp. strain BB1 (4) (= DSM 9487), *Mycobacterium* sp. strain PAH 135 (5), and *Mycobacterium hodleri* sp. nov. (2). Stackebrandt and coworkers have recently characterized the phylogenetic position of some of the strains by 16S rRNA sequencing: *Mycobacterium hodleri* was established as a novel species, while strain PYR-1 was found to be indistinguishable from *M. austroafricanum* and strain PAH 135 was found to be highly related to *M. aichiense* by this type of analysis (2, 3). We have recently determined the 16S rRNA sequence of strain BB1 (sequence accession number EMBL X81891) and found it to be nearly identical to that of *Mycobacterium gilvum* (sequence accession number X55599, homology 99.8%). Sequence determination of the reference strain of *M. gilvum* ATCC 43909 revealed that the minor nucleotide differences with strain BB1 were due to sequencing errors in the previously published sequence, X55599. We conclude that strain BB-1 is in all likelihood identical to *M. gilvum*. This conclusion is supported by the mycolic acid profile (presence of mycolates I, II, and VI) and by physiological properties (kindly provided by V. Vincent, Institut Pasteur [Table 1]).

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TABLE 1. Physiological characteristics of *Mycobacterium* strain BB1

Parameter ^a	<i>Mycobacterium</i> strain BB1	<i>M. parafortuitum</i>	<i>M. gilvum</i>	<i>M. austroafricanum</i>	<i>M. chubuense</i>	<i>M. obuense</i>	<i>M. diernhoferi</i>
NO ₃	+	+	+	+	+	–	+
Aryl	+	–	+	+	–	+	–
Growth at:							
37°C	+	+	+	+	+	+	+
42°C	–	+	–	–	–	–	–
Urease	+	+	+	+	+	+	+
Tween	+	+	+	+	–	–	+
Growth on:							
PNB	+			+	+	+	
Tb1	+	+	+	+	+	+	+
NH ₂ OH	–	–	–	–	–	–	–
NaCl (5%)	+	+	–	+			–
Cap	–	–	–		–	–	
EMB	–	–	–	+	–	+	–
MacConkey	–	–					–
CFA	–	+	+			–	+
Citrase	–	+	+	+	+	+	+
Acid production from:							
Fructose	+	+		+	+	+	+
Mannitol	+	+	+	+	–	+	+
Inositol	+	+	+	+	–	–	+
Trehalose	+	+	+	–	–	+	+

^a NO₃, nitrate reductase; Aryl, arylsulfatase; Tween, Tween 80 hydrolysis at 5 days; PNB, *p*-nitrobenzoate (500 µg/ml); Tb1, thiosemicarbazone (2 µg/ml); NH₂OH, hydroxylamine (250 µg/ml); CAP, capreomycin (40 µg/ml); EMB, ethambutol (2 µg/ml); CFA, iron uptake; citrase, citrate as sole carbon source.