

TABLE 15-1 Basic Characteristics for Identification of Selected *Bacillus* Species<sup>a</sup>

Species <sup>b</sup>	Motility	Catalase Production	Parasporal Bodies	Lipid Globules in Protoplasm	Lecithoviteilin Reaction	Citrate Utilization	Anaerobic Growth	V-P Reaction	pH in V-P Medium < 6.0	Growth at 50° C	Growth at 60° C	Growth in 7% NaCl	Acid from AS Glucose	Acid + Gas from AS Glucose	Nitrate Reduction	Casein Hydrolysis	Starch Hydrolysis	Propionate Utilization
Morphologic group 1																		
<i>B. megaterium</i>	v	+	-	+	-	+	-	-	v	-	-	+	+	-	v	+	+	n
<i>B. cereus</i>	+	+	-	+	+	+	+	+	+	-	-	+	+	-	+	+	+	n
<i>B. cereus</i> subsp. <i>mycoides</i>	-	+	-	+	+	+	+	+	+	-	-	+	+	-	+	+	+	n
<i>B. anthracis</i>	-	+	-	+	+	v	+	+	+	-	-	+	+	-	+	+	+	n
<i>B. thuringiensis</i>	+	+	+	+	+	+	+	+	+	-	-	+	+	-	+	+	+	n
<i>B. licheniformis</i>	+	+	-	-	-	+	+	+	+	+	-	+	+	-	+	+	+	+
<i>B. subtilis</i>	+	+	-	-	-	+	-	+	v	v	-	+	+	-	+	+	+	-
<i>B. pumilus</i>	+	+	-	-	-	+	-	+	+	v	-	+	+	-	-	+	-	-
<i>B. firmus</i>	v	+	-	-	-	-	-	-	-	-	-	+	+	-	+	+	+	-
<i>B. coagulans</i>	+	+	-	-	-	v	+	+	+	+	v	-	+	-	v	v	+	-
Morphologic group 2																		
<i>B. polymyxa</i>	+	+	-	-	-	-	+	+	v	-	-	-	+	+	+	+	+	n
<i>B. macerans</i>	+	+	-	-	-	v	+	-	+	+	-	-	+	+	+	-	+	n
<i>B. circulans</i>	v	+	-	-	-	v	v	-	+	v	-	v	+	-	v	v	+	n
<i>B. stearothermophilus</i>	+	v	-	-	-	-	-	-	+	+	+	-	+	-	v	v	+	n
<i>B. alvei</i>	+	+	-	-	-	-	+	+	+	-	-	-	+	-	-	+	+	n
<i>B. laterosporus</i> <sup>c</sup>	+	+	-	-	(+)	-	+	-	+	-	-	-	+	-	+	+	-	n
<i>B. brevis</i>	+	+	-	-	-	v	-	-	-	v	v	-	+	-	v	+	-	n
Morphologic group 3																		
<i>B. sphaericus</i>	+	+	-	-	-	v	-	-	-	-	-	v	-	-	-	v	-	n

<sup>a</sup> V-P, Voges-Proskauer; AS, ammonium salt; +, more than 85 percent of strains examined by Gordon et al. (See References) were positive; -, more than 85 percent of strains negative; v, variable; n, test not applicable; (+), under colony which must be scraped off to see positive reaction.

<sup>b</sup> Species grouped according to the classification scheme of Gordon et al. Morphologic group 1: sporangium not swollen by spore; spore ellipsoidal or cylindrical, central or terminal; Gram positive. Morphologic group 2: sporangium swollen by ellipsoidal spore; spore central or terminal; Gram variable. Morphologic group 3: sporangium swollen by spore; spore spherical, subterminal, or terminal; Gram variable.

<sup>c</sup> Sporangium and spore have characteristic canoe shape.