

BIOL 3702L: Microbiology Laboratory

Diagnostic Features of Selected Bacteria

The following tables describe the metabolic properties of selected bacteria, any of which may be included in your unknown sample. These tables divide the selected bacteria among the Gram-positive Cocci, Coliform Enterics (Gram-negative, lactose fermenting rods), and the Non-Coliform Enterics (Gram-negative, non-lactose fermenting rods).

Take special note of the following bacteria not included in these tables, but which may also be included in your unknown sample:

- Bacillus cereus* – Gram-positive, endospore-forming rod
- Mycobacterium smegmatis* – Acid-fast positive rod
- Neisseria* sp. – Gram-negative coccus

Other metabolic properties of these above three species can be found in your laboratory manual.

Gram-Positive Cocci

GRAM POSITIVE COCCI	Staphylococcus epidermidis	Staphylococcus aureus	Streptococcus faecalis	Streptococcus bovis	Micrococcus roseus	Micrococcus luteus
Catalase	+	+	-	-	+	+
Mannitol fermentation	-	+	-	-	-	-
Bile Esculin	-	-	+	+	-	-
Pigmentation	-	-	-	-	-	-
Growth in 6.5% NaCl TSB	+	+	+	-	+	+
DNAase	-	+	-	-	-	-

Coliform Enterics

COLIFORM ENTERICS	Escherichia coli	Enterobacter aerogenes	Enterobacter cloacae	Klebsiella pneumoniae	Citrobacter freundii
Lactose	+	+	+	+	+
Oxidase	-	-	-	-	-
Lysine decarboxylase	-	+	-	+	-
Arginine decarboxylase	-	-	+	-	-
Ornithine decarboxylase	-	+	+	-	-
Simmon's citrate	-	+	+	+	+
Methyl red	+	-	-	+	+
Voges-Proskauer	-	+	+	-	-
Indole	+	-	-	-	-
Urease	-	-	-	-	-
Phenylalanine	-	-	-	-	-
Hydrogen sulfide	-	-	-	-	+

Non-Coliform Enterics

NON COLIFORM ENTERICS	<i>Edwardsiella tarda</i>	<i>Salmonella typhimurium</i>	<i>Shigella sonnei</i>	<i>Proteus mirabilis</i>	<i>Proteus vulgaris</i>	<i>Providencia stuartii</i>
Lactose	-	-	-	-	-	-
Oxidase	-	-	-	-	-	-
Lysine decarboxylase	+	+	-	-	-	-
Ornithine decarboxylase	+	+	-	+	-	-
Arginine decarboxylase	-	-	-	-	-	-
Simmons citrate	-	+	-	+	-	+
Methyl red	+	+	+	+	+	+
Voges-Proskauer	-	-	-	-	-	-
Indole	+	-	-	-	+	+
Urease	-	-	-	+	+	-
Phenylalanine	-	-	-	+	+	+
Hydrogen sulfide	+	+	-	+	+	-