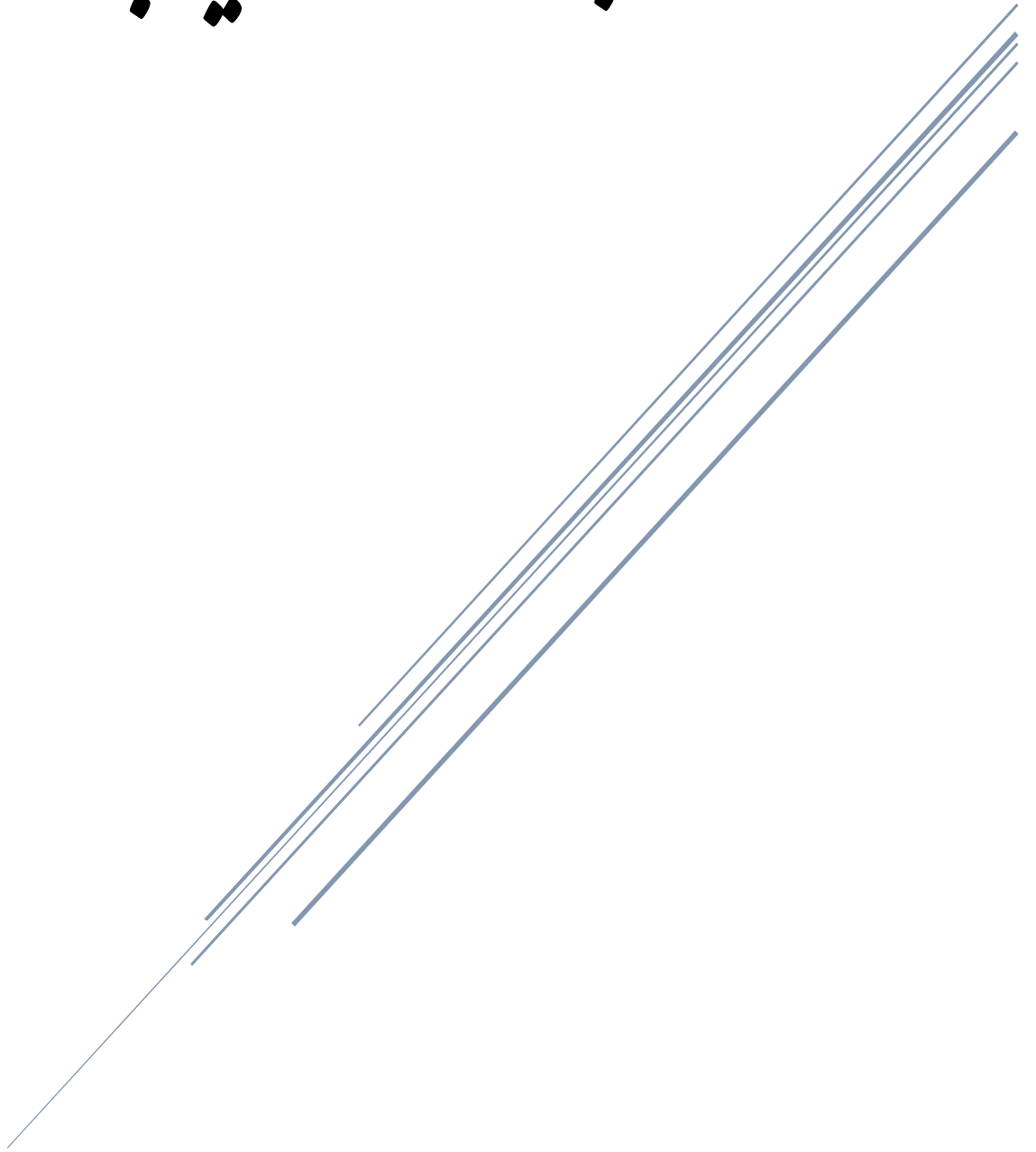


BACTERIAL IDENTIFICATION TABLE

جدول شناسایی باکتری ها



collected by Ahmad Gaeny
Monday - 2017 20 November

Budvicia aquatica

Indole production : 0	Raffinose : 0
Methyl red (MR) : 93 %	Rhamnose : 100 %
Voges-Proskauer (VP) : 0	Maltose : 0
Citrate : 0	Xylose : 93 %
Hydrogen sulfide (H ₂ S) : 80 %	Trehalose : 0
Urea hydrolysis : 33 %	Cellobiose : 0
Phenyl alanine : 0	Methyl : 0
Lysine decarboxylase (LDC) : 0	Erythritol : 0
Arginine dihydrolase (ADH) : 0	Esculin : 0
Ornithine decarboxylase (ODC) : 0	Melibiose : 0
Motility : 27 %	Arabitol : 27 %
Gelatin hydrolysis : 0	Glycerol : 0
Growth on KCN : 0	Mucate : 20 %
Malonate utilization : 0	Tartate : 27 %
Acid from glucose : 100 %	Acetate : 0
Gas from Glucose : 53 %	Lipase : 0
Lactose : 87 %	DNase : 0
Sucrose : 0	Nitrates reduction : 100 %
Mannitol : 60 %	Oxidase : 0
Dulcitol : 0	ONPG : 93 %
Salicin : 0	Yellow pigment : 0
Adonitol : 0	Mannose : 0
Inositol : 0	
Sorbitol : 0	
Arabinose : 80 %	

References

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2. J. G. Holt et al., 1994. Facultatively Anaerobic Gram-Negative Rods. Subgroup 1. Family Enterobacteriaceae. In: *Bergey's Manual of Determinative Bacteriology*, 9th-edition, Williams & Wilkins, pp 175-189.
3. Don J. Brenner and J.J. Farmer III, 2001. Family I. Enterobacteriaceae. In: *Bergey's Manual of Systematic Bacteriology*, Second edition, Vol two, part B, George M. Garrity (Editor-in-Chief), pp 587- 897.

Buttiauxella agrestis

Indole production : 0	Raffinose : 100 %
Methyl red (MR) : 100 %	Rhamnose : 100 %
Voges-Proskauer (VP) : 0	Maltose : 100 %
Citrate : 100 %	Xylose : 100 %
Hydrogen sulfide (H ₂ S) : 0	Trehalose : 100 %
Urea hydrolysis : 0	Cellobiose : 100 %
Phenyl alanine : 0	Methyl : 0
Lysine decarboxylase (LDC) : 0	Erythritol : 0
Arginine dihydrolase (ADH) : 0	Esculin : 100 %
Ornithine decarboxylase (ODC) : 100 %	Melibiose : 100 %
Motility : 100 %	Arabitol : 0
Gelatin hydrolysis : 0	Glycerol : 60 %
Growth on KCN : 80 %	Mucate : 100 %
Malonate utilization : 60 %	Tartate : 60 %
Acid from glucose : 100 %	Acetate : 0
Gas from Glucose : 100 %	Lipase : 0
Lactose : 100 %	DNase : 0
Sucrose : 0	Nitrates reduction : 100 %
Mannitol : 100 %	Oxidase : 0
Dulcitol : 0	ONPG : 100 %
Salicin : 100 %	Yellow pigment : 0
Adonitol : 0	Mannose : 100 %
Inositol : 0	
Sorbitol : 0	
Arabinose : 100 %	

References

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Cedecea

	C. davisae	C. lapagei	C. neteri	Cedecea sp 5	Cedecea sps 3
Indole	0	0	0	0	0
MR	100 %	40 %	100 %	100 %	100 %
VP	50 %	80 %	50 %	50 %	50 %
Citrate	95 %	99 %	100 %	100 %	100 %
H2S	0	0	0	0	0
Urea	0	0	0	0	0
Phenyl alanine	0	0	0	0	0
Lysine	0	0	0	0	0
Arginine	50 %	80 %	100 %	50 %	100 %
Ornithine	95 %	0	0	50 %	0
Motility	95 %	80 %	100 %	100 %	100 %
Gelatin	0	0	0	0	0
KCN	86 %	100 %	65 %	100 %	100 %
Malonate	91 %	99 %	100 %	0	0
Acid from glucose	100 %	100 %	100 %	100 %	100 %
Gas from Glucose	70 %	100 %	100 %	100 %	100 %
Lactose	19 %	60 %	35 %	0	0
Sucrose	100 %	0	100 %	100 %	50 %
Mannitol	100 %	100 %	100 %	100 %	100 %
Dulcitol	0	0	0	0	0
Salicin	99 %	100 %	100 %	100 %	100 %
Adonitol	0	0	0	0	0
Inositol	0	0	0	0	0
Sorbitol	0	0	100 %	100 %	0
Arabinose	0	0	0	0	0
Raffinose	10 %	0	0	100 %	100 %
Rhamnose	0	0	0	0	0
Maltose	100 %	100 %	100 %	100 %	100 %
Xylose	100 %	0	100 %	100 %	100 %
Trehalose	100 %	100 %	100 %	100 %	100 %
Cellobiose	100 %	100 %	100 %	100 %	100 %
Methyl	5 %	0	0	0	50 %
Erythritol	0	0	0	0	0
Esculin	45 %	100 %	100 %	100 %	100 %
Melibiose	0	0	0	100 %	100 %
Arabitol	100 %	100 %	100 %	100 %	100 %
Glycerol	0	0	0	0	0
Mucate	0	0	0	0	0
Tartate	0	0	0	0	0
Acetate	0	60 %	0	50 %	50 %
Lipase	91 %	100 %	100 %	50 %	100 %
DNase	0	0	0	0	0
Nitrate	100 %	100 %	100 %	100 %	100 %
Oxidase	0	0	0	0	0

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ONPG	90 %	99 %	100 %	100 %	100 %
Yellow pigment	0	0	0	0	0
Mannose	100 %	100 %	100 %	100 %	100 %

References

1. J. G. Holt et al., 1994. Facultatively Anaerobic Gram-Negative Rods. Subgroup 1. Family Enterobacteriaceae. In: Begey's Manual of Determinative Bacteriology, 9th-edition, Williams & Wilkins, pp 175-189.
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Citrobacter

	C.amalonaticus	C.amalonaticus biogroup 1	C.diversus	C.freundii
Indole	100 %	100 %	99 %	5 %
MR	100 %	100 %	100 %	100 %
VP	0	0	0	0
Citrate	85 %	1 %	99 %	95 %
H₂S	0	0	0	80 %
Urea	80 %	45 %	75 %	70 %
Phenyl alanine	0	0	0	0
Lysine	0	0	0	0
Arginine	85 %	85 %	65 %	65 %
Ornithine	95 %	100 %	99 %	20 %
Motility	98 %	99 %	95 %	95 %
Gelatin	0	0	0	0
KCN	95 %	96 %	0	96 %
Malonate	0	0	90 %	15 %
Acid from glucose	100 %	100 %	100 %	100 %
Gas from Glucose	97 %	93 %	98 %	95 %
Lactose	50 %	19 %	35 %	50 %
Sucrose	15 %	100 %	45 %	30 %
Mannitol	100 %	100 %	100 %	99 %
Dulcitol	0	4 %	50 %	55 %
Salicin	40 %	5 %	20 %	5 %
Adonitol	0	0	98 %	0
Inositol	0	0	0	3 %

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Sorbitol	100 %	100 %	99 %	98 %
Arabinose	100 %	100 %	100 %	100 %
Raffinose	5 %	100 %	0	30 %
Rhamnose	99 %	100 %	100 %	99 %
Maltose	99 %	100 %	100 %	99 %
Xylose	99 %	100 %	100 %	99 %
Trehalose	100 %	100 %	100 %	99 %
Cellobiose	100 %	100 %	99 %	55 %
Methyl	5 %	70 %	40 %	5 %
Erythritol	0	0	0	0
Esculin	10 %	0	2 %	0
Melibiose	5 %	100 %	0	50 %
Arabitol	0	0	100 %	0
Glycerol	70 %	55 %	98 %	98 %
Mucate	98 %	100 %	93 %	95 %
Tartate	85 %	93 %	75 %	90 %
Acetate	75 %	82 %	75 %	80 %
Lipase	0	0	0	0
DNase	0	0	0	0
Nitrate	99 %	100 %	100 %	99 %
Oxidase	0	0	0	0
ONPG	100 %	100 %	96 %	95 %
Yellow pigment	0	0	0	0
Mannose	100 %	100 %	100 %	100 %

References

1. J. G. Holt et al., 1994. Facultatively Anaerobic Gram-Negative Rods. Subgroup 1. Family Enterobacteriaceae. In: Begey's Manual of Determinative Bacteriology, 9th-edition, Williams & Wilkins, pp 175-189.
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Edwardsiella

	E.tarda(piscicida)	E.tarda biogroup 1	E.hoshinae	E.ictaluri
Indole	99 %	100 %	50 %	0
MR	100 %	100 %	100 %	0
VP	0	0	0	0
Citrate	1 %	0	0	0
H2S	100 %	0	0	0
Urea	0	0	0	0
Phenyl alanine	0	0	0	0
Lysine	100 %	100 %	100 %	100 %
Arginine	0	0	0	0
Ornithine	100 %	100 %	95 %	65 %
Motility	98 %	100 %	100 %	0
Gelatin	0	0	0	0
KCN	0	0	0	0
Malonate	0	0	100 %	0
Acid from glucose	100 %	100 %	100 %	100 %
Gas from Glucose	100 %	50 %	35 %	50 %
Lactose	0	0	0	0
Sucrose	0	100 %	100 %	0
Mannitol	0	100 %	100 %	0
Dulcitol	0	0	0	0
Salicin	0	0	50 %	0
Adonitol	0	0	0	0
Inositol	0	0	0	0
Sorbitol	0	0	0	0
Arabinose	9 %	100 %	13 %	0
Raffinose	0	0	0	0
Rhamnose	0	0	0	0
Maltose	100 %	100 %	100 %	100 %
Xylose	0	0	0	0
Trehalose	0	0	100 %	0
Cellobiose	0	0	0	0
Methyl	0	0	0	0
Erythritol	0	0	0	0
Esculin	0	0	0	0
Melibiose	0	0	0	0
Arabitol	0	0	0	0
Glycerol	30 %	0	65 %	0
Mucate	0	0	0	0
Tartate	25 %	0	0	0
Acetate	0	0	0	0
Lipase	0	0	0	0
DNase	0	0	0	0
Nitrate	100 %	100 %	100 %	100 %
Oxidase	0	0	0	0

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ONPG	0	0	0	0
Yellow pigment	0	0	0	0
Mannose	100 %	100 %	100 %	100 %

References

1. Don J. Brenner and J.J. Farmer III, 2001. Family I. Enterobacteriaceae. In: Bergey's Manual of Systematic Bacteriology, Second edition, Vol two, part B, George M. Garrity (Editor-in-Chief), pp 587- 897.
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Enteric Group

	E.Group 58	E.Group 59	E.Group 60	E.Group 63	E.Group 64	E.Group 68	E.Group 69	E.Group 90
Indole	0	10 %	0	0	0	0	0	13 %
MR	100 %	100 %	100 %	100 %	100 %	100 %	0	100 %
VP	0	0	0	0	0	50 %	100 %	0
Citrate	85 %	100 %	0	0	50 %	0	100 %	88 %
H ₂ S	0	0	0	0	0	0	0	100 %
Urea	70 %	0	50 %	0	0	0	0	0
Phenyl alanine	0	30 %	0	0	0	0	0	0
Lysine	100 %	0	0	100 %	0	0	0	100 %
Arginine	0	60 %	0	0	50 %	0	100 %	0
Ornithine	85 %	0	100 %	100 %	0	0	100 %	100 %
Motility	100 %	100 %	75 %	65 %	100 %	0	100 %	100 %
Gelatin	0	0	0	0	0	0	0	0
KCN	100 %	80 %	0	0	100 %	100 %	100 %	100 %
Malonate	85 %	90 %	100 %	0	100 %	0	100 %	0
Acid from glucose	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Gas from Glucose	85 %	100 %	100 %	100 %	50 %	0	100 %	100 %
Lactose	30 %	80 %	0	0	100 %	0	100 %	0
Sucrose	0	0	0	0	0	100 %	25 %	0
Mannitol	100 %	100 %	50 %	100 %	100 %	100 %	100 %	100 %

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Dulcitol	85 %	0	0	0	0	0	100 %	0
Salicin	100 %	100 %	0	100 %	100 %	50 %	100 %	13 %
Adonitol	0	0	0	0	100 %	0	0	0
Inositol	0	0	0	0	0	0	0	0
Sorbitol	100 %	0	0	100 %	0	0	100 %	100 %
Arabinose	100 %	100 %	25 %	100 %	100 %	0	100 %	100 %
Raffinose	0	0	0	0	0	0	100 %	0
Rhamnose	100 %	100 %	75 %	100 %	100 %	0	100 %	100 %
Maltose	100 %	100 %	0	100 %	100 %	50 %	100 %	100 %
Xylose	100 %	100 %	0	100 %	100 %	0	100 %	100 %
Trehalose	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Cellobiose	100 %	100 %	0	100 %	100 %	0	100 %	100 %
Methyl	55 %	10 %	0	65 %	0	0	100 %	0
Erythritol	0	0	0	0	0	0	0	0
Esculin	0	100 %	0	100 %	100 %	0	100 %	13 %
Melibiose	0	0	0	0	0	0	100 %	0
Arabitol	0	10 %	0	0	100 %	0	0	0
Glycerol	30 %	10 %	75 %	0	0	50 %	0	0
Mucate	0	60 %	0	65 %	100 %	0	100 %	100 %
Tartate	60 %	50 %	75 %	0	50 %	0	0	50 %
Acetate	45 %	50 %	0	0	0	0	25 %	88 %
Lipase	0	0	0	0	0	0	0	0
DNase	0	0	0	0	0	100 %	0	0
Nitrate	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Oxidase	0	0	0	0	0	0	0	0
ONPG	100 %	100 %	100 %	100 %	100 %	0	100 %	0
Yellow pigment	0	25 %	0	0	0	0	100 %	0
Mannose	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100

References

Don J. Brenner and J.J. Farmer III, 2001. Family I. Enterobacteriaceae. In: Bergey's Manual of Systematic Bacteriology, Second edition, Vol two, part B, George M. Garrity (Editor-in-Chief), pp 587-897.

Enterobacter

	E.aerogenes	E.agglomerans	E.amnigenus biogroup 1	E.amnigenus biogroup 2	E.cloacae	E.gergoviae
Indole	0	20 %	0	0	0	0
MR	5 %	50 %	7 %	65 %	5 %	5 %
VP	98 %	70 %	100 %	100 %	100 %	100 %
Citrate	95 %	50 %	70 %	100 %	100 %	99 %
H ₂ S	0	0	0	0	0	0
Urea	2 %	20 %	0	0	65 %	93 %
Phenyl alanine	0	20 %	0	0	0	0
Lysine	98 %	0	0	0	0	90 %
Arginine	0	0	9 %	35 %	97 %	0
Ornithine	98 %	0	55 %	100 %	96 %	100 %
Motility	97 %	85 %	92 %	100 %	95 %	90 %

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Gelatin	0	2 %	0	0	0	0
KCN	98 %	35 %	100 %	100 %	98 %	0
Malonate	95 %	65 %	91 %	100 %	75 %	96 %
Acid from glucose	100 %	100 %	100 %	100 %	100 %	100 %
Gas from Glucose	100 %	20 %	100 %	100 %	100 %	98 %
Lactose	95 %	40 %	70 %	35 %	93 %	55 %
Sucrose	100 %	75 %	100 %	0	97 %	98 %
Mannitol	100 %	100 %	100 %	100 %	100 %	99 %
Dulcitol	5 %	15 %	0	0	15 %	0
Salicin	100 %	65 %	91 %	100 %	75 %	99 %
Adonitol	98 %	7 %	0	0	25 %	0
Inositol	95 %	15 %	0	0	15 %	0
Sorbitol	100 %	30 %	9 %	100 %	95 %	0
Arabinose	100 %	95 %	100 %	100 %	100 %	99 %
Raffinose	96 %	30 %	100 %	0	97 %	97 %
Rhamnose	99 %	85 %	100 %	100 %	92 %	99 %
Maltose	99 %	89 %	100 %	100 %	100 %	100 %
Xylose	100 %	93 %	100 %	100 %	99 %	99 %
Trehalose	100 %	97 %	100 %	100 %	100 %	100 %
Cellobiose	100 %	55 %	100 %	100 %	99 %	99 %
Methyl	95 %	7 %	55 %	100 %	85 %	2 %
Erythritol	0	0	0	0	0	0
Esculin	98 %	60 %	91 %	100 %	30 %	97 %
Melibiose	99 %	50 %	100 %	100 %	90 %	97 %
Arabitol	100 %	50 %	0	0	15 %	97 %
Glycerol	98 %	30 %	0	0	40 %	100 %
Mucate	90 %	40 %	35 %	100 %	75 %	2 %
Tartate	95 %	25 %	9 %	0	30 %	97 %
Acetate	50 %	30 %	0	0	75 %	93 %
Lipase	0	0	0	0	0	0
DNase	0	0	0	0	0	0
Nitrate	100 %	85 %	100 %	100 %	99 %	99 %
Oxidase	0	0	0	0	0	0
ONPG	100 %	90 %	91 %	100 %	99 %	97 %
Yellow pigment	0	75 %	0	0	0	0
Mannose	95 %	98 %	100 %	100 %	100 %	100 %

Enterobacter

	E.saka zakii	E.tylor ae	E.intermedi um	E.canceroge nus	E.asburi ae	E.dissolv ens	E.nimipressur alis
Indole	11 %	0	0	0	0	0	0
MR	5 %	5 %	100 %	0	100 %	0	100 %

collected by Ahmad Gaeny

VP	100 %	100 %	100 %	100 %	2 %	100 %	100 %
Citrate	99 %	100 %	65 %	100 %	100 %	100 %	0
H2S	0	0	0	0	0	0	0
Urea	1 %	1 %	0	0	60 %	100 %	0
Phenyl alanine	50 %	0	0	0	0	0	0
Lysine	0	0	0	0	0	0	0
Arginine	99 %	94 %	0	100 %	21 %	100 %	0
Ornithine	91 %	99 %	89 %	100 %	95 %	100 %	100 %
Motility	96 %	99 %	89 %	100 %	0	0	0
Gelatin	0	0	0	0	0	0	0
KCN	99 %	98 %	65 %	100 %	97 %	100 %	100 %
Malonate	18 %	100 %	100 %	100 %	3 %	100 %	100 %
Acid from glucose	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Gas from Glucose	98 %	100 %	100 %	100 %	95 %	100 %	100 %
Lactose	99 %	10 %	100 %	0	75 %	0	0
Sucrose	100 %	0	65 %	0	100 %	100 %	0
Mannitol	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Dulcitol	5 %	0	100 %	0	0	0	0
Salicin	99 %	92 %	0	100 %	100 %	100 %	100 %
Adonitol	0	0	0	0	0	0	0
Inositol	75 %	0	0	0	0	0	0
Sorbitol	0	1 %	100 %	0	100 %	100 %	100 %
Arabinose	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Raffinose	99 %	0	100 %	0	70 %	100 %	0
Rhamnose	100 %	100 %	100 %	100 %	5 %	100 %	100 %
Maltose	100 %	99 %	100 %	100 %	100 %	100 %	100 %
Xylose	100 %	100 %	100 %	100 %	97 %	100 %	100 %
Trehalose	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Cellobiose	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Methyl	96 %	1 %	100 %	0	95 %	100 %	100 %
Erythritol	0	0	0	0	0	0	0
Esculin	100 %	90 %	100 %	100 %	95 %	100 %	100 %
Melibiose	100 %	0	100 %	0	0	100 %	100 %
Arabitol	0	0	0	0	0	0	0
Glycerol	15 %	1 %	100 %	0	11 %	0	0
Mucate	1 %	75 %	100 %	100 %	21 %	100 %	100 %
Tartate	1 %	0	100 %	0	30 %	0	0
Acetate	96 %	35 %	0	33 %	87 %	100 %	0
Lipase	0	0	0	0	0	0	0
DNase	0	0	0	0	0	0	0
Nitrate	99 %	100 %	100 %	100 %	100 %	100 %	100 %
Oxidase	0	0	0	0	0	0	0
ONPG	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Yellow pigment	98 %	0	0	0	0	0	0
Mannose	100 %	100 %	100 %	100 %	100 %	100 %	100 %

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Escherichia

	E.coli	E.coli(inactive)	E.fergusonii	E.hermanii	E.vulneris	E.blattae
Indole	98 %	80 %	98 %	99 %	0	0
MR	99 %	95 %	100 %	100 %	100 %	100 %
VP	0	0	0	0	0	0
Citrate	1 %	1 %	17 %	1 %	0	50 %
H₂S	1 %	1 %	0	0	0	0
Urea	1 %	1 %	0	0	0	0
Phenyl alanine	0	0	0	0	0	0
Lysine	90 %	40 %	95 %	6 %	85 %	100 %
Arginine	17 %	3 %	5 %	0	30 %	0
Ornithine	65 %	20 %	100 %	100 %	0	100 %
Motility	95 %	5 %	93 %	99 %	100 %	0
Gelatin	0	0	0	0	0	0
KCN	3 %	1 %	0	94 %	15 %	0
Malonate	0	0	35 %	0	85 %	100 %
Acid from glucose	100 %	100 %	100 %	100 %	100 %	100 %

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Gas from Glucose	95 %	5 %	95 %	97 %	97 %	100 %
Lactose	95 %	25 %	0	45 %	15 %	0
Sucrose	50 %	15 %	0	45 %	8 %	0
Mannitol	98 %	93 %	98 %	100 %	100 %	0
Dulcitol	60 %	40 %	60 %	19 %	0	0
Salicin	40 %	10 %	65 %	40 %	30 %	0
Adonitol	5 %	3 %	98 %	0	0	0
Inositol	1 %	1 %	0	0	0	0
Sorbitol	94 %	75 %	0	0	1 %	0
Arabinose	99 %	85 %	98 %	100 %	100 %	100 %
Raffinose	50 %	15 %	0	40 %	99 %	0
Rhamnose	80 %	65 %	92 %	97 %	93 %	100 %
Maltose	95 %	80 %	96 %	100 %	100 %	100 %
Xylose	95 %	70 %	96 %	100 %	100 %	100 %
Trehalose	98 %	90 %	96 %	100 %	100 %	75 %
Cellobiose	2 %	2 %	96 %	97 %	100 %	0
Methyl	0	0	0	0	25 %	0
Erythritol	0	0	0	0	0	0
Esculin	35 %	5 %	46 %	40 %	20 %	0
Melibiose	75 %	40 %	0	0	100 %	0
Arabitol	5 %	5 %	100 %	8 %	0	0
Glycerol	75 %	65 %	20 %	3 %	25 %	100 %
Mucate	95 %	30 %	0	97 %	78 %	50 %
Tartate	95 %	85 %	96 %	35 %	2 %	50 %
Acetate	90 %	40 %	96 %	78 %	30 %	0
Lipase	0	0	0	0	0	0
DNase	0	0	0	0	0	0
Nitrate	100 %	98 %	100 %	100 %	100 %	100 %
Oxidase	0	0	0	0	0	0
ONPG	95 %	45 %	83 %	98 %	100 %	0
Yellow pigment	0	0	0	98 %	50 %	0
Mannose	98 %	97 %	100 %	100 %	100 %	100 %

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Ewingella americana

Indole production : 0	Raffinose : 0
Methyl red (MR) : 84 %	Rhamnose : 23 %
Voges-Proskauer (VP) : 95 %	Maltose : 16 %
Citrate : 95 % 0	Xylose : 13 %
Hydrogen sulfide (H₂S) : 0	Trehalose : 99 %
Urea hydrolysis : 0	Cellobiose : 10 %
Phenyl alanine : 0	Methyl : 0
Lysine decarboxylase (LDC) : 0	Erythritol : 0
Arginine dihydrolase (ADH) : 0	Esculin : 50 %
Ornithine decarboxylase (ODC) : 0	Melibiose : 0
Motility : 60 %	Arabitol : 99 %
Gelatin hydrolysis : 0	Glycerol : 24 %
Growth on KCN : 5 %	Mucate : 0
Malonate utilization : 0	Tartate : 35 %
Acid from glucose : 100 %	Acetate : 10 %
Gas from Glucose : 0	Lipase : 0
Lactose : 70 %	DNase : 0
Sucrose : 0	Nitrates reduction : 97 %
Mannitol : 100 %	Oxidase : 0
Dulcitol : 0	ONPG : 85 %
Salicin : 80 %	Yellow pigment : 0
Adonitol : 0	Mannose : 99 %
Inositol : 0	
Sorbitol : 0	
Arabinose : 0	

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Hafnia

	Hafnia alvei	Hafnia alvei biogroup 1
Indole	0	0
MR	40 %	85 %
VP	85 %	70 %
Citrate	10 %	0
H ₂ S	0	0
Urea	4 %	0
Phenyl alanine	0	0
Lysine	100 %	100 %
Arginine	6 %	0
Ornithine	98 %	45 %
Motility	85 %	0
Gelatin	0	0
KCN	95 %	0
Malonate	50 %	45 %
Acid from glucose	100 %	100 %
Gas from Glucose	98 %	0
Lactose	5 %	0
Sucrose	10 %	0
Mannitol	99 %	55 %
Dulcitol	0	0
Salicin	13 %	55 %
Adonitol	0	0
Inositol	0	0
Sorbitol	0	0
Arabinose	95 %	0
Raffinose	2 %	0
Rhamnose	97 %	0
Maltose	100 %	0
Xylose	98 %	0
Trehalose	95 %	70 %
Cellobiose	15 %	0
Methyl	0	0
Erythritol	0	0
Esculin	7 %	0
Melibiose	0	0

collected by Ahmad Gaeeny

Arabitol	0	0
Glycerol	95 %	0
Mucate	0	0
Tartate	70 %	30 %
Acetate	15 %	0
Lipase	0	0
DNase	0	0
Nitrate	100 %	100 %
Oxidase	0	0
ONPG	90 %	30 %
Yellow pigment	0	0
Mannose	100 %	100 %

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Klebsiella

	K.pneumoniae	K.oxytoca	K.ornitholytica	K.planticola
Indole	0	99 %	100 %	20 %
MR	10 %	20 %	98 %	100 %
VP	98 %	95 %	70 %	98 %
Citrate	98 %	95 %	100 %	100 %
H ₂ S	0	0	0	0
Urea	95 %	90 %	100 %	98 %
Phenyl alanine	0	1 %	0	0
Lysine	98 %	99 %	100 %	100 %
Arginine	0	0	0	0
Ornithine	0	0	100 %	0
Motility	0	0	0	0
Gelatin	0	0	0	0
KCN	98 %	97 %	100 %	100 %
Malonate	93 %	98 %	100 %	100 %

collected by Ahmad Gaeeny

Acid from glucose	100 %	100 %	100 %	100 %
Gas from Glucose	97 %	97 %	100 %	100 %
Lactose	98 %	100 %	100 %	100 %
Sucrose	99 %	100 %	100 %	100 %
Mannitol	99 %	99 %	100 %	100 %
Dulcitol	30 %	55 %	10 %	15 %
Salicin	99 %	100 %	100 %	100 %
Adonitol	90 %	99 %	100 %	100 %
Inositol	95 %	98 %	95 %	100 %
Sorbitol	99 %	99 %	100 %	92 %
Arabinose	99 %	98 %	100 %	100 %
Raffinose	99 %	100 %	100 %	100 %
Rhamnose	99 %	100 %	100 %	100 %
Maltose	98 %	100 %	100 %	100 %
Xylose	99 %	100 %	100 %	100 %
Trehalose	99 %	100 %	100 %	100 %
Cellobiose	98 %	100 %	100 %	100 %
Methyl	90 %	98 %	100 %	100 %
Erythritol	0	2 %	0	0
Esculin	99 %	100 %	100 %	100 %
Melibiose	99 %	99 %	100 %	100 %
Arabitol	98 %	98 %	100 %	100 %
Glycerol	97 %	99 %	100 %	100 %
Mucate	90 %	93 %	96 %	100 %
Tartate	95 %	98 %	100 %	100 %
Acetate	75 %	90 %	95 %	62 %
Lipase	0	0	0	0
DNase	0	0	0	0
Nitrate	99 %	100 %	100 %	100 %
Oxidase	0	0	0	0
ONPG	99 %	100 %	100 %	100 %
Yellow pigment	0	1 %	0	1 %
Mannose	100 %	100 %	100 %	100 %

Klebsiella

	K.ozanae	K.rhinoscleromatis	K.terrigena
Indole	0	0	0
MR	96 %	100 %	60 %
VP	0	0	100 %
Citrate	30 %	0	40 %
H2S	0	0	0
Urea	10 %	0	0
Phenyl alanine	0	0	0
Lysine	40 %	0	100 %
Arginine	6 %	0	0

collected by Ahmad Gaeeny

Ornithine	3 %	0	20 %
Motility	0	0	0
Gelatin	0	0	0
KCN	88 %	80 %	100 %
Malonate	3 %	95 %	100 %
Acid from glucose	100 %	100 %	100 %
Gas from Glucose	50 %	0	80 %
Lactose	30 %	0	100 %
Sucrose	20 %	75 %	100 %
Mannitol	100 %	100 %	100 %
Dulcitol	2 %	0	20 %
Salicin	97 %	98 %	100 %
Adonitol	97 %	100 %	100 %
Inositol	55 %	95 %	80 %
Sorbitol	65 %	100 %	100 %
Arabinose	98 %	100 %	100 %
Raffinose	90 %	90 %	100 %
Rhamnose	55 %	98 %	100 %
Maltose	95 %	100 %	100 %
Xylose	95 %	100 %	100 %
Trehalose	98 %	100 %	100 %
Cellobiose	92 %	100 %	100 %
Methyl	70 %	0	100 %
Erythritol	0	0	0
Esculin	80 %	30 %	100 %
Melibiose	97 %	100 %	100 %
Arabitol	95 %	100 %	100 %
Glycerol	65 %	50 %	100 %
Mucate	25 %	0	100 %
Tartate	50 %	50 %	100 %
Acetate	2 %	0	20 %
Lipase	0	0	0
DNase	0	0	0
Nitrate	80 %	100 %	100 %
Oxidase	0	0	0
ONPG	80 %	0	100 %
Yellow pigment	0	0	0
Mannose	100 %	100 %	100 %

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Kluyyera

	Kluyyera ascorbata	Kluyyera cryocrescens
Indole	92 %	90 %
MR	100 %	100 %
VP	0	0
Citrate	96 %	80 %
H ₂ S	0	0
Urea	0	0
Phenyl alanine	0	0
Lysine	97 %	23 %
Arginine	0	0
Ornithine	100 %	100 %
Motility	98 %	90 %
Gelatin	0	0
KCN	92 %	86 %
Malonate	96 %	86 %
Acid from glucose	100 %	100 %
Gas from Glucose	93 %	95 %
Lactose	98 %	95 %
Sucrose	98 %	81 %
Mannitol	100 %	95 %
Dulcitol	25 %	0
Salicin	100 %	100 %
Adonitol	0	0
Inositol	0	0
Sorbitol	40 %	45 %
Arabinose	100 %	100 %
Raffinose	98 %	100 %
Rhamnose	100 %	100 %
Maltose	100 %	100 %
Xylose	99 %	91 %

collected by Ahmad Gaeeny

Trehalose	100 %	100 %
Cellobiose	100 %	100 %
Methyl	98 %	95 %
Erythritol	0	0
Esculin	99 %	100 %
Melibiose	99 %	100 %
Arabitol	0	0
Glycerol	40 %	5 %
Mucate	90 %	81 %
Tartate	35 %	19 %
Acetate	50 %	86 %
Lipase	0	0
DNase	0	0
Nitrate	100 %	100 %
Oxidase	0	0
ONPG	100 %	100 %
Yellow pigment	0	0
Mannose	100 %	100 %

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Koserella trabulsii

Indole production : 0	Raffinose : 25 %
Methyl red (MR) : 100 %	Rhamnose : 100 %
Voges-Proskauer (VP) : 0	Maltose : 100 %
Citrate : 92 %	Xylose : 100 %
Hydrogen sulfide (H ₂ S) : 0	Trehalose : 100 %
Urea hydrolysis : 0	Cellobiose : 100 %
Phenyl alanine : 0	Methyl : 0
Lysine decarboxylase (LDC) : 100 %	Erythritol : 0
Arginine dihydrolase (ADH) : 8 %	Esculin : 67 %
Ornithine decarboxylase(ODC) : 100 %	Melibiose : 92 %

collected by Ahmad Gaeeny

Motility : 100 %	Arabitol : 0
Gelatin hydrolysis : 0	Glycerol : 0
Growth on KCN : 92 %	Mucate : 0
Malonate utilization : 0	Tartate : 0
Acid from glucose : 100 %	Acetate : 25 %
Gas from Glucose : 100 %	Lipase : 0
Lactose : 0	DNase : 0
Sucrose : 0	Nitrates reduction : 100 %
Mannitol : 100 %	Oxidase : 0
Dulcitol : 0	ONPG : 100 %
Salicin : 8 %	Yellow pigment : 0
Adonitol : 0	Mannose : 100 %
Inositol : 0	
Sorbitol : 0	
Arabinose : 100 %	

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Leclercia adecarboxylata

Indole production : 100 %	Raffinose : 66 %
Methyl red (MR) : 100 %	Rhamnose : 100 %
Voges-Proskauer (VP) : 0	Maltose : 100 %
Citrate : 0	Xylose : 100 %
Hydrogen sulfide (H ₂ S) : 0	Trehalose : 100 %
Urea hydrolysis : 48 %	Cellobiose : 100 %
Phenyl alanine : 0	Methyl : 0
Lysine decarboxylase (LDC) : 0	Erythritol : 0
Arginine dihydrolase (ADH) : 0	Esculin : 100 %
Ornithine decarboxylase (ODC) : 0	Melibiose : 100 %
Motility : 79 %	Arabitol : 96 %
Gelatin hydrolysis : 0	Glycerol : 3 %
Growth on KCN : 97 %	Mucate : 93 %
Malonate utilization : 93 %	Tartate : 83 %
Acid from glucose : 100 %	Acetate : 28 %
Gas from Glucose : 97 %	Lipase : 0
Lactose : 93 %	DNase : 0
Sucrose : 66 %	Nitrates reduction : 100 %
Mannitol : 100 %	Oxidase : 0
Dulcitol : 86 %	ONPG : 100 %
Salicin : 100 %	Yellow pigment : 37 %
Adonitol : 93 %	Mannose : 100 %
Inositol : 0	
Sorbitol : 0	
Arabinose : 100 %	

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Leminorella

	Leminorella grimontii	Leminorella richardii
Indole	0	0
MR	100 %	0
VP	0	0
Citrate	100 %	0
H ₂ S	100 %	100 %
Urea	0	0
Phenyl alanine	0	0
Lysine	0	0
Arginine	0	0
Ornithine	0	0
Motility	0	0
Gelatin	0	0
KCN	0	0
Malonate	0	0
Acid from glucose	100 %	100 %
Gas from Glucose	33 %	0
Lactose	0	0
Sucrose	0	0
Mannitol	0	0
Dulcitol	83 %	0
Salicin	0	0
Adonitol	0	0
Inositol	0	0
Sorbitol	0	0
Arabinose	100 %	100 %
Raffinose	0	0
Rhamnose	0	0
Maltose	0	0

collected by Ahmad Gaeny

Xylose	83 %	100 %
Trehalose	0	0
Cellobiose	0	0
Methyl	0	0
Erythritol	0	0
Esculin	0	0
Melibiose	0	0
Arabitol	0	0
Glycerol	17 %	0
Mucate	100 %	50 %
Tartate	100 %	100 %
Acetate	0	0
Lipase	0	0
DNase	0	0
Nitrate	100 %	100 %
Oxidase	0	0
ONPG	0	0
Yellow pigment	0	0
Mannose	0	0

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Moellerella wisconsensis

Indole production : 0	Raffinose : 100 %
Methyl red (MR) : 100 %	Rhamnose : 0
Voges-Proskauer (VP) : 0	Maltose : 30 %
Citrate : 80 %	Xylose : 0
Hydrogen sulfide (H₂S) : 0	Trehalose : 0
Urea hydrolysis : 0	Cellobiose : 0
Phenyl alanine : 0	Methyl : 0
Lysine decarboxylase (LDC) : 0	Erythritol : 0
Arginine dihydrolase (ADH) : 0	Esculin : 0
Ornithine decarboxylase (ODC) : 0	Melibiose : 100 %
Motility : 0	Arabitol : 75 %
Gelatin hydrolysis : 0	Glycerol : 10 %
Growth on KCN : 70 %	Mucate : 0
Malonate utilization : 0	Tartate : 30 %

collected by Ahmad Gaeeny

Acid from glucose : 100 %	Acetate : 10 %
Gas from Glucose : 0	Lipase : 0
Lactose : 0	DNase : 0
Sucrose : 100 %	Nitrates reduction : 90 %
Mannitol : 60 %	Oxidase : 0
Dulcitol : 0	ONPG : 90 %
Salicin : 0	Yellow pigment : 0
Adonitol : 100 %	Mannose : 100 %
Inositol : 0	
Sorbitol : 0	
Arabinose : 0	

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Morganella

	<i>Morganella morganii</i>	<i>Morganella morganii</i> biogroup 1
Indole	98 %	100 %
MR	97 %	95 %
VP	0	0
Citrate	0	0
H ₂ S	5 %	41 %
Urea	98 %	100 %
Phenyl alanine	95 %	100 %
Lysine	0	100 %
Arginine	0	0
Ornithine	98 %	95 %
Motility	95 %	0
Gelatin	0	0
KCN	98 %	91 %
Malonate	1 %	5 %
Acid from glucose	100 %	100 %
Gas from Glucose	90 %	91 %
Lactose	1 %	0
Sucrose	0	0
Mannitol	0	0

collected by Ahmad Gaeeny

Dulcitol	0	0
Salicin	0	0
Adonitol	0	0
Inositol	0	0
Sorbitol	0	0
Arabinose	0	0
Raffinose	0	0
Rhamnose	0	0
Maltose	0	0
Xylose	0	0
Trehalose	10 %	0
Cellobiose	0	0
Methyl	0	0
Erythritol	0	0
Esculin	0	0
Melibiose	0	0
Arabitol	0	0
Glycerol	5 %	100 %
Mucate	0	0
Tartate	95 %	100 %
Acetate	0	0
Lipase	0	0
DNase	0	0
Nitrate	90 %	91 %
Oxidase	0	0
ONPG	5 %	0
Yellow pigment	0	0
Mannose	98 %	95 %

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Obesumbacterium proteus biogroup 2

Indole production : 0	Raffinose : 0
Methyl red (MR) : 15 %	Rhamnose : 15 %
Voges-Proskauer (VP) : 0	Maltose : 50 %
Citrate : 0	Xylose : 15 %
Hydrogen sulfide (H ₂ S) : 0	Trehalose : 85 %
Urea hydrolysis : 0	Cellobiose : 0
Phenyl alanine : 0	Methyl : 0
Lysine decarboxylase (LDC) : 100 %	Erythritol : 0
Arginine dihydrolase (ADH) : 0	Esculin : 0
Ornithine decarboxylase(ODC) : 100 %	Melibiose : 0
Motility : 0	Arabitol : 0
Gelatin hydrolysis : 0	Glycerol : 0
Growth on KCN : 0	Mucate : 0
Malonate utilization : 0	Tartate : 15 %
Acid from glucose : 100 %	Acetate : 0
Gas from Glucose : 0	Lipase : 0
Lactose : 0	DNase : 0
Sucrose : 0	Nitrates reduction : 100 %
Mannitol : 0	Oxidase : 0
Dulcitol : 0	ONPG : 0
Salicin : 0	Yellow pigment : 0
Adonitol : 0	Mannose : 85 %
Inositol : 0	
Sorbitol : 0	
Arabinose : 0	

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Pragia fontium

Indole production : 0	Raffinose : 0
Methyl red (MR) : 100 %	Rhamnose : 0
Voges-Proskauer (VP) : 0	Maltose : 0
Citrate : 89 %	Xylose : 0
Hydrogen sulfide (H ₂ S) : 89 %	Trehalose : 0
Urea hydrolysis : 0	Cellobiose : 0
Phenyl alanine : 22 %	Methyl : 0
Lysine decarboxylase (LDC) : 0	Erythritol : 0
Arginine dihydrolase (ADH) : 0	Esculin : 78 %
Ornithine decarboxylase (ODC) : 0	Melibiose : 0
Motility : 100 %	Arabitol : 0
Gelatin hydrolysis : 0	Glycerol : 0
Growth on KCN : 0	Mucate : 0
Malonate utilization : 0	Tartate : 0
Acid from glucose : 100 %	Acetate : 0
Gas from Glucose : 0	Lipase : 0
Lactose : 0	DNase : 0
Sucrose : 0	Nitrates reduction : 100 %
Mannitol : 0	Oxidase : 0
Dulcitol : 0	ONPG : 0
Salicin : 78 %	Yellow pigment : 0
Adonitol : 0	Mannose : 0
Inositol : 0	
Sorbitol : 0	
Arabinose : 0	

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Proteus

	P. mirabilis	P. vulgaris	P. penneri	P. myxofaciens
Indole	2 %	98 %	0	0
MR	97 %	95 %	100 %	100 %
VP	50 %	0	0	100 %
Citrate	65 %	15 %	0	50 %
H ₂ S	98 %	95 %	30 %	0
Urea	98 %	95 %	100 %	100 %
Phenyl alanine	98 %	99 %	99 %	100 %
Lysine	0	0	0	0
Arginine	0	0	0	0
Ornithine	99 %	0	0	0
Motility	95 %	95 %	85 %	100 %
Gelatin	90 %	91 %	50 %	100 %
KCN	98 %	99 %	99 %	100 %
Malonate	2 %	0	0	0
Acid from glucose	100 %	100 %	100 %	100 %
Gas from Glucose	96 %	85 %	45 %	100 %
Lactose	2 %	2 %	1 %	0
Sucrose	15 %	97 %	100 %	100 %
Mannitol	0	0	0	0
Dulcitol	0	0	0	0
Salicin	0	50 %	0	0
Adonitol	0	0	0	0
Inositol	0	0	0	0
Sorbitol	0	0	0	0
Arabinose	0	0	0	0
Raffinose	1 %	1 %	1 %	0
Rhamnose	1 %	5 %	0	0
Maltose	0	97 %	100 %	100 %
Xylose	98 %	95 %	100 %	0
Trehalose	98 %	30 %	55 %	100 %
Cellobiose	1 %	0	0	0
Methyl	0	60 %	80 %	100 %
Erythritol	0	1 %	0	0
Esculin	0	50 %	0	0
Melibiose	0	0	0	0
Arabitol	0	0	0	0
Glycerol	70 %	60 %	55 %	100 %
Mucate	0	0	0	0
Tartate	87 %	80 %	85 %	100 %
Acetate	20 %	25 %	5 %	0
Lipase	92 %	80 %	45 %	100 %

collected by Ahmad Gaeeny

DNase	50 %	80 %	40 %	50 %
Nitrate	95 %	98 %	90 %	100 %
Oxidase	0	0	0	0
ONPG	0	1 %	1 %	0
Yellow pigment	0	0	0	0
Mannose	0	0	0	0

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Providencia

	<i>P. rettgeri</i>	<i>P. stuartii</i>	<i>P. alcalifaciens</i>	<i>P. rustigianii</i>	<i>P. heimbachae</i>
Indole	99 %	98 %	99 %	98 %	0
MR	93 %	100 %	99 %	65 %	85 %
VP	0	0	0	0	0
Citrate	95 %	93 %	98 %	15 %	0
H ₂ S	0	0	0	0	0
Urea	98 %	30 %	0	0	0
Phenyl alanine	98 %	95 %	98 %	100 %	100 %
Lysine	0	0	0	0	0
Arginine	0	0	0	0	0
Ornithine	0	0	1 %	0	0
Motility	94 %	85 %	96 %	30 %	46 %

collected by Ahmad Gaeeny

Gelatin	0	0	0	0	0
KCN	97 %	100 %	100 %	100 %	8 %
Malonate	0	0	0	0	0
Acid from glucose	100 %	100 %	100 %	100 %	100 %
Gas from Glucose	10 %	0	85 %	35 %	0
Lactose	5 %	2 %	0	0	0
Sucrose	15 %	50 %	15 %	35 %	0
Mannitol	100 %	10 %	2 %	0	0
Dulcitol	0	0	0	0	0
Salicin	50 %	2 %	1 %	0	0
Adonitol	100 %	5 %	98 %	0	92 %
Inositol	90 %	95 %	1 %	0	46 %
Sorbitol	1 %	1 %	1 %	0	0
Arabinose	0	1 %	1 %	0	0
Raffinose	5 %	7 %	1 %	0	0
Rhamnose	70 %	0	0	0	100 %
Maltose	2 %	1 %	1 %	0	54 %
Xylose	10 %	7 %	1 %	0	8 %
Trehalose	0	98 %	2 %	0	0
Cellobiose	3 %	5 %	1 %	0	0
Methyl	2 %	0	0	0	0
Erythritol	75 %	0	0	0	0
Esculin	35 %	0	0	0	0
Melibiose	5 %	0	0	0	0
Arabitol	100 %	0	0	0	92 %
Glycerol	60 %	50 %	15 %	5 %	0
Mucate	0	0	0	0	0
Tartate	95 %	90 %	90 %	50 %	69 %
Acetate	60 %	75 %	40 %	25 %	0
Lipase	0	0	0	0	0
DNase	0	1 %	0	0	0
Nitrate	100 %	100 %	100 %	100 %	100 %
Oxidase	0	0	0	0	0
ONPG	5 %	10 %	1 %	0	0
Yellow pigment	0	0	0	0	0
Mannose	100 %	100 %	100 %	100 %	100 %

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Rahnella aquatilis

Indole	0
MR	88 %
VP	100 %
Citrate	94 %
H ₂ S	0
Urea	0
Phenyl alanine	95 %
Lysine	0
Arginine	0
Ornithine	0
Motility	6 %
Gelatin	0
KCN	0
Malonate	100 %
Acid from glucose	100 %
Gas from Glucose	98 %
Lactose	100 %
Sucrose	100 %
Mannitol	100 %
Dulcitol	88 %
Salicin	100 %
Adonitol	0
Inositol	0

collected by Ahmad Gaeeny

Sorbitol	94 %
Arabinose	100 %
Raffinose	94 %
Rhamnose	94 %
Maltose	94 %
Xylose	94 %
Trehalose	100 %
Cellobiose	100 %
Methyl	0
Erythritol	0
Esculin	100 %
Melibiose	100 %
Arabitol	0
Glycerol	13 %
Mucate	30 %
Tartate	6 %
Acetate	6 %
Lipase	0
DNase	0
Nitrate	100 %
Oxidase	0
ONPG	100 %
Yellow pigment	0
Mannose	100 %

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Salmonella

	S.subgroup1 most serotypes	Salmonella typhi	Salmonella choleraesuis	Salmonella paratyphi A
Indole	1 %	0	0	0
MR	100 %	100 %	100 %	100 %
VP	0	0	0	0
Citrate	95 %	0	25 %	0
H ₂ S	95 %	97 %	50 %	10 %
Urea	1 %	0	0	0
Phenyl alanine	0	0	0	0
Lysine	98 %	98 %	95 %	0
Arginine	70 %	3 %	55 %	15 %
Ornithine	97 %	0	100 %	95 %
Motility	95 %	97 %	95 %	95 %
Gelatin	0	0	0	0
KCN	0	0	0	0
Malonate	0	0	0	0
Acid from glucose	100 %	100 %	100 %	100 %
Gas from Glucose	96 %	0	95 %	99 %
Lactose	1 %	1 %	0	0
Sucrose	1 %	0	0	0
Mannitol	100 %	100 %	98 %	100 %
Dulcitol	96 %	0	5 %	90 %
Salicin	0	0	0	0
Adonitol	0	0	0	0
Inositol	35 %	0	0	0
Sorbitol	95 %	99 %	90 %	95 %
Arabinose	99 %	2 %	0	100 %
Raffinose	2 %	0	1 %	0
Rhamnose	95 %	0	100 %	100 %
Maltose	97 %	97 %	95 %	95 %
Xylose	97 %	82 %	98 %	0
Trehalose	99 %	100 %	0	100 %
Cellobiose	5 %	0	0	5 %
Methyl	2 %	0	0	0
Erythritol	0	0	1 %	0
Esculin	5 %	0	0	0
Melibiose	95 %	100 %	45 %	95 %
Arabitol	0	0	1 %	0

collected by Ahmad Gaeny

Glycerol	5 %	20 %	0	10 %
Mucate	90 %	0	0	0
Tartate	90 %	100 %	85 %	0
Acetate	9 %	0	1 %	0
Lipase	0	0	0	0
DNase	2 %	0	0	0
Nitrate	100 %	100 %	98 %	100 %
Oxidase	0	0	0	0
ONPG	2 %	0	0	0
Yellow pigment	0	0	0	0
Mannose	100 %	100 %	95 %	100 %

Salmonella

	Salmonella gallinarum	Salmonella pullorum	Salmonella subgroup 2a strains	Salmonella subgroup 3a [Arizona]	Salmonella subgroup 3b [Arizona]
Indole	0	0	2 %	1 %	2 %
MR	100 %	90 %	100 %	100 %	100 %
VP	0	0	0	0	0
Citrate	0	0	100 %	99 %	98 %
H ₂ S	100 %	90 %	100 %	99 %	99 %
Urea	0	0	0	0	0
Phenyl alanine	0	0	0	0	0
Lysine	90 %	100 %	100 %	99 %	99 %
Arginine	10 %	10 %	90 %	70 %	70 %
Ornithine	1 %	95 %	100 %	99 %	99 %
Motility	0	0	96 %	99 %	99 %
Gelatin	0	0	2 %	0	0
KCN	0	0	0	1 %	1 %
Malonate	0	0	95 %	95 %	95 %
Acid from glucose	100 %	100 %	100 %	100 %	100 %
Gas from Glucose	0	90 %	100 %	99 %	99 %
Lactose	0	0	1 %	15 %	85 %
Sucrose	0	0	1 %	1 %	5 %
Mannitol	100 %	100 %	100 %	100 %	100 %
Dulcitol	90 %	0	90 %	0	1 %
Salicin	0	0	5 %	0	0
Adonitol	0	0	0	0	0
Inositol	0	0	5 %	0	0
Sorbitol	1 %	10 %	100 %	99 %	99 %
Arabinose	80 %	100 %	100 %	99 %	99 %

collected by Ahmad Gaeeny

Raffinose	10 %	1 %	0	1 %	1 %
Rhamnose	10 %	100 %	100 %	99 %	99 %
Maltose	90 %	5 %	100 %	98 %	98 %
Xylose	70 %	90 %	100 %	100 %	100 %
Trehalose	50 %	90 %	100 %	99 %	99 %
Cellobiose	10 %	5 %	0	1 %	1 %
Methyl	0	0	8 %	1 %	1 %
Erythritol	1 %	0	0	0	0
Esculin	0	0	15 %	1 %	1 %
Melibiose	0	0	8 %	95 %	95 %
Arabitol	0	0	0	1 %	1 %
Glycerol	0	0	25 %	10 %	10 %
Mucate	50 %	0	96 %	90 %	30 %
Tartate	100 %	0	50 %	5 %	20 %
Acetate	0	0	95 %	90 %	75 %
Lipase	0	0	0	0	0
DNase	10 %	0	0	2 %	2 %
Nitrate	100 %	100 %	100 %	100 %	100 %
Oxidase	0	0	0	0	0
ONPG	0	0	15 %	100 %	100 %
Yellow pigment	0	0	0	0	0
Mannose	100 %	100 %	95 %	100 %	100 %

Salmonella

	Salmonella subgroup 4 strains	Salmonella subgroup 5 strains	Salmonella subgroup 6 strains
Indole	0	0	0
MR	100 %	100 %	100 %
VP	0	0	0
Citrate	98 %	100 %	89 %
H ₂ S	100 %	100 %	100 %
Urea	2 %	0	0
Phenyl alanine	0	0	0
Lysine	100 %	100 %	100 %
Arginine	70 %	100 %	67 %
Ornithine	100 %	100 %	100 %
Motility	96 %	100 %	100 %
Gelatin	0	0	0
KCN	95 %	100 %	0
Malonate	0	0	0
Acid from glucose	100 %	100 %	100 %
Gas from Glucose	100 %	80 %	100 %
Lactose	0	0	22 %

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Sucrose	0	0	0
Mannitol	98 %	100 %	100 %
Dulcitol	0	100 %	67 %
Salicin	60 %	0	0
Adonitol	5 %	0	0
Inositol	0	0	0
Sorbitol	100 %	100 %	0
Arabinose	100 %	100 %	100 %
Raffinose	0	0	0
Rhamnose	98 %	100 %	100 %
Maltose	100 %	100 %	100 %
Xylose	100 %	100 %	100 %
Trehalose	100 %	100 %	100 %
Cellobiose	50 %	0	0
Methyl	0	0	0
Erythritol	0	0	0
Esculin	0	0	0
Melibiose	100 %	75 %	89 %
Arabitol	5 %	0	0
Glycerol	0	0	33 %
Mucate	0	100 %	100 %
Tartate	65 %	0	100 %
Acetate	70 %	100 %	89 %
Lipase	0	0	0
DNase	0	0	0
Nitrate	100 %	100 %	100 %
Oxidase	0	0	0
ONPG	0	100 %	44 %
Yellow pigment	0	0	0
Mannose	100 %	100 %	100 %

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Serratia

	S.marcescens	S.marcescens biogroup 1	S.liquefaciens	S.odorifera biogroup 1	S.odorifera biogroup 2
Indole	1 %	0	1 %	60 %	50 %
MR	20 %	100 %	93 %	100 %	60 %
VP	98 %	60 %	93 %	50 %	100 %
Citrate	98 %	30 %	90 %	100 %	97 %
H₂S	0	0	0	0	0
Urea	15 %	0	3 %	5 %	0
Phenyl alanine	0	0	0	0	0
Lysine	99 %	55 %	95 %	100 %	94 %
Arginine	0	4 %	0	0	0
Ornithine	99 %	65 %	95 %	100 %	0
Motility	97 %	17 %	95 %	100 %	100 %
Gelatin	90 %	30 %	90 %	95 %	94 %
KCN	95 %	70 %	90 %	60 %	19 %
Malonate	3 %	0	2 %	0	0
Acid from glucose	100 %	100 %	100 %	100 %	100 %
Gas from Glucose	55 %	0	75 %	0	13 %
Lactose	2 %	4 %	10 %	70 %	97 %
Sucrose	99 %	100 %	98 %	100 %	0
Mannitol	99 %	96 %	100 %	100 %	97 %
Dulcitol	0	0	0	0	0
Salicin	95 %	92 %	97 %	98 %	45 %
Adonitol	40 %	30 %	5 %	50 %	55 %
Inositol	75 %	30 %	60 %	100 %	100 %
Sorbitol	99 %	92 %	95 %	100 %	100 %
Arabinose	0	0	98 %	100 %	100 %

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Raffinose	2 %	0	85 %	100 %	7 %
Rhamnose	0	0	15 %	95 %	94 %
Maltose	98 %	70 %	98 %	100 %	100 %
Xylose	7 %	0	100 %	100 %	100 %
Trehalose	99 %	100 %	100 %	100 %	100 %
Cellobiose	5 %	4 %	5 %	100 %	100 %
Methyl	0	0	5 %	0	0
Erythritol	1 %	0	0	0	7 %
Esculin	95 %	96 %	97 %	95 %	40 %
Melibiose	0	0	75 %	100 %	96 %
Arabitol	0	0	0	0	0
Glycerol	95 %	92 %	95 %	40 %	50 %
Mucate	0	0	0	5 %	0
Tartate	75 %	50 %	75 %	100 %	100 %
Acetate	50 %	4 %	40 %	60 %	65 %
Lipase	98 %	75 %	85 %	35 %	65 %
DNase	98 %	82 %	85 %	100 %	100 %
Nitrate	98 %	83 %	100 %	100 %	100 %
Oxidase	0	0	0	0	0
ONPG	95 %	75 %	93 %	100 %	100 %
Yellow pigment	0	0	0	0	0
Mannose	99 %	100 %	100 %	100 %	100 %

Serratia

	Serratia rubidaea	Serratia plymuthica	Serratia ficaria	Serratia fonticola	Serratia entomophila
Indole	0	0	0	0	0
MR	20 %	94 %	75 %	100 %	20 %
VP	100 %	80 %	75 %	9 %	100 %
Citrate	95 %	75 %	100 %	91 %	100 %
H ₂ S	0	0	0	0	0
Urea	2 %	0	0	13 %	0
Phenyl alanine	0	0	0	0	0
Lysine	55 %	0	0	100 %	0
Arginine	0	0	0	0	0
Ornithine	0	0	0	97 %	0
Motility	85 %	50 %	100 %	91 %	100 %
Gelatin	90 %	60 %	100 %	0	100 %
KCN	25 %	30 %	55 %	70 %	100 %
Malonate	94 %	0	0	88 %	0
Acid from glucose	100 %	100 %	100 %	100 %	100 %

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Gas from Glucose	30 %	40 %	0	79 %	0
Lactose	100 %	80 %	15 %	97 %	0
Sucrose	99 %	100 %	100 %	21 %	100 %
Mannitol	100 %	100 %	100 %	100 %	100 %
Dulcitol	0	0	0	91 %	0
Salicin	99 %	94 %	100 %	100 %	100 %
Adonitol	99 %	0	0	100 %	0
Inositol	20 %	50 %	55 %	30 %	0
Sorbitol	1 %	65 %	100 %	100 %	0
Arabinose	100 %	100 %	100 %	100 %	0
Raffinose	99 %	94 %	70 %	100 %	0
Rhamnose	1 %	0	35 %	76 %	0
Maltose	99 %	94 %	100 %	97 %	100 %
Xylose	99 %	94 %	100 %	85 %	40 %
Trehalose	100 %	100 %	100 %	100 %	100 %
Cellobiose	94 %	88 %	100 %	6 %	0
Methyl	1 %	70 %	8 %	91 %	0
Erythritol	0	0	0	0	0
Esculin	94 %	81 %	100 %	100 %	100 %
Melibiose	99 %	93 %	40 %	98 %	0
Arabitol	85 %	0	100 %	100 %	60 %
Glycerol	20 %	50 %	0	88 %	0
Mucate	0	0	0	0	0
Tartate	70 %	100 %	17 %	58 %	100 %
Acetate	80 %	55 %	40 %	15 %	80 %
Lipase	99 %	70 %	77 %	0	20 %
DNase	99 %	100 %	100 %	0	100 %
Nitrate	100 %	100 %	92 %	100 %	100 %
Oxidase	0	0	8 %	0	0
ONPG	100 %	70 %	100 %	100 %	100 %
Yellow pigment	0	0	0	0	0
Mannose	100 %	100 %	100 %	100 %	100 %

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Shigella

	Shigella O groups A,B,C	Shigella sonnei
Indole	50 %	0
MR	100 %	100 %
VP	0	0
Citrate	0	0
H ₂ S	0	0
Urea	0	0
Phenyl alanine	0	0
Lysine	0	0
Arginine	5 %	2 %
Ornithine	1 %	98 %
Motility	0	0
Gelatin	0	0
KCN	0	0
Malonate	0	0
Acid from glucose	100 %	100 %
Gas from Glucose	2 %	0
Lactose	0	2 %
Sucrose	0	1 %
Mannitol	93 %	99 %
Dulcitol	2 %	0
Salicin	0	0
Adonitol	0	0
Inositol	0	0
Sorbitol	30 %	2 %
Arabinose	60 %	95 %
Raffinose	50 %	3 %
Rhamnose	5 %	75 %

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Maltose	30 %	90 %
Xylose	2 %	2 %
Trehalose	80 %	100 %
Cellobiose	0	5 %
Methyl	0	0
Erythritol	0	0
Esculin	0	0
Melibiose	50 %	95 %
Arabitol	0	0
Glycerol	10 %	15 %
Mucate	0	10 %
Tartate	30 %	90 %
Acetate	2 %	0
Lipase	0	0
DNase	0	0
Nitrate	100 %	100 %
Oxidase	0	0
ONPG	2 %	90 %
Yellow pigment	0	0
Mannose	100 %	100 %

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Tatumella tyseos

Indole	0
MR	0
VP	5 %
Citrate	2 %
H ₂ S	1 %
Urea	0
Phenyl alanine	90 %
Lysine	0
Arginine	0
Ornithine	0
Motility	0
Gelatin	0

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KCN	0
Malonate	0
Acid from glucose	100 %
Gas from Glucose	0
Lactose	0
Sucrose	98 %
Mannitol	0
Dulcitol	0
Salicin	55 %
Adonitol	0
Inositol	0
Sorbitol	0
Arabinose	0
Raffinose	11 %
Rhamnose	0
Maltose	0
Xylose	9 %
Trehalose	93 %
Cellobiose	0
Methyl	0
Erythritol	0
Esculin	0
Melibiose	25 %
Arabitol	0
Glycerol	7 %
Mucate	0
Tartate	0
Acetate	0
Lipase	0
DNase	0
Nitrate	98 %
Oxidase	0
ONPG	0
Yellow pigment	0
Mannose	100 %

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Xenorhabdus

	X. luminescens	X.luminescens DNA group 1	X. nematophilus
Indole	50 %	0	40 %
MR	0	0	0
VP	0	0	0
Citrate	50 %	20 %	0
H2S	0	0	0
Urea	25 %	60 %	0
Phenyl alanine	0	0	0
Lysine	0	0	0
Arginine	0	0	0
Ornithine	95 %	95 %	100 %
Motility	2 %	5 %	5 %
Gelatin	0	0	0
KCN	2 %	0	10 %
Malonate	0	0	5 %
Acid from glucose	100 %	100 %	100 %
Gas from Glucose	5 %	40 %	18 %
Lactose	5 %	40 %	35 %
Sucrose	95 %	100 %	100 %
Mannitol	98 %	100 %	100 %
Dulcitol	0	0	0
Salicin	20 %	92 %	100 %
Adonitol	0	0	0
Inositol	30 %	20 %	15 %
Sorbitol	99 %	100 %	100 %
Arabinose	98 %	100 %	100 %
Raffinose	5 %	30 %	45 %
Rhamnose	1 %	99 %	100 %
Maltose	75 %	100 %	100 %
Xylose	70 %	100 %	100 %
Trehalose	98 %	100 %	100 %
Cellobiose	75 %	100 %	96 %
Methyl	0	0	77 %
Erythritol	0	0	0
Esculin	25 %	85 %	100 %

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Melibiose	1 %	0	80 %
Arabitol	40 %	100 %	45 %
Glycerol	90 %	85 %	60 %
Mucate	0	5 %	6 %
Tartate	85 %	55 %	88 %
Acetate	15 %	15 %	18 %
Lipase	55 %	55 %	12 %
DNase	5 %	0	0
Nitrate	98 %	100 %	94 %
Oxidase	0	0	0
ONPG	95 %	100 %	90 %
Yellow pigment	0	0	0
Mannose	100 %	100 %	100 %

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Yersinia

	Y.enterocolitica	Y.frederiksenii	Y.intermedia	Y.kristensenii	Y.rohdei	Y.pestis
Indole	50 %	100 %	100 %	30 %	0	0
MR	97 %	100 %	100 %	92 %	62 %	80 %
VP	2 %	0	5 %	0	0	0
Citrate	0	15 %	5 %	0	0	0
H ₂ S	0	0	0	0	0	0
Urea	75 %	70 %	80 %	77 %	62 %	5 %
Phenyl alanine	0	0	0	0	0	0
Lysine	0	0	0	0	0	0
Arginine	0	0	0	0	0	0
Ornithine	92 %	25 %	0	0	40 %	80 %
Motility	5 %	0	0	0	0	0
Gelatin	0	0	0	0	0	0
KCN	0	0	0	0	0	0
Malonate	0	0	0	0	0	0

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Acid from glucose	100 %	100 %	100 %	100 %	100 %	100 %
Gas from Glucose	23 %	0	0	0	0	0
Lactose	8 %	0	0	0	0	20 %
Sucrose	0	100 %	0	0	20 %	100 %
Mannitol	100 %	100 %	97 %	100 %	80 %	100 %
Dulcitol	0	0	0	0	0	0
Salicin	15 %	0	70 %	25 %	0	20 %
Adonitol	0	0	0	0	0	0
Inositol	15 %	0	0	0	0	0
Sorbitol	100 %	100 %	50 %	0	60 %	100 %
Arabinose	77 %	100 %	100 %	50 %	60 %	100 %
Raffinose	0	62 %	0	15 %	0	0
Rhamnose	0	0	1 %	71 %	0	0
Maltose	100 %	0	80 %	95 %	0	100 %
Xylose	85 %	38 %	90 %	100 %	40 %	100 %
Trehalose	100 %	100 %	100 %	100 %	80 %	100 %
Cellobiose	100 %	25 %	0	0	0	100 %
Methyl	0	0	0	0	0	0
Erythritol	0	0	0	0	0	0
Esculin	0	0	50 %	95 %	0	20 %
Melibiose	0	50 %	20 %	70 %	0	0
Arabitol	45 %	0	0	0	0	0
Glycerol	70 %	38 %	50 %	50 %	0	0
Mucate	0	0	0	0	0	0
Tartate	40 %	100 %	0	50 %	100 %	100 %
Acetate	8 %	0	0	0	0	0
Lipase	0	0	0	0	0	0
DNase	0	0	0	0	0	0
Nitrate	100 %	88 %	85 %	95 %	100 %	100 %
Oxidase	0	0	0	0	0	0
ONPG	70 %	50 %	50 %	70 %	0	80 %
Yellow pigment	0	0	0	0	0	0
Mannose	100 %	100 %	100 %	100 %	100 %	100 %

Yersinia

	Yersinia bercoveri	Yersinia ruckeri	Yersinia pseudotuberculosis	Yersinia moliaretii	Yersinia aldovae
Indole	0	0	0	0	0
MR	100 %	97 %	100 %	100 %	80 %
VP	0	10 %	0	0	0
Citrate	0	0	0	0	0
H2S	0	0	0	0	0

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Urea	60 %	0	95 %	20 %	60 %
Phenyl alanine	0	0	0	0	0
Lysine	0	50 %	0	0	0
Arginine	0	5 %	0	0	0
Ornithine	0	0	80 %	0	100 %
Motility	100 %	100 %	0	100 %	0
Gelatin	50 %	80 %	0	80 %	30 %
KCN	0	0	0	20 %	15 %
Malonate	0	0	0	0	0
Acid from glucose	75 %	80 %	100 %	100 %	100 %
Gas from Glucose	0	0	0	0	5 %
Lactose	0	0	40 %	0	0
Sucrose	0	0	100 %	0	0
Mannitol	0	0	100 %	0	100 %
Dulcitol	0	0	0	0	0
Salicin	0	0	0	0	0
Adonitol	0	0	0	0	0
Inositol	0	0	0	0	0
Sorbitol	0	0	100 %	0	50 %
Arabinose	0	0	100 %	0	5 %
Raffinose	0	0	0	0	5 %
Rhamnose	0	0	0	0	0
Maltose	25 %	0	60 %	0	95 %
Xylose	0	0	60 %	0	0
Trehalose	0	0	100 %	0	95 %
Cellobiose	0	0	100 %	0	5 %
Methyl	0	0	0	0	0
Erythritol	0	0	0	0	0
Esculin	0	0	0	0	0
Melibiose	0	0	0	0	0
Arabitol	0	0	0	0	0
Glycerol	0	0	20 %	0	30 %
Mucate	0	0	0	0	0
Tartate	50 %	60 %	100 %	60 %	30 %
Acetate	0	0	0	20 %	0
Lipase	0	0	0	0	30 %
DNase	0	20 %	0	0	0
Nitrate	0	20 %	100 %	0	75 %
Oxidase	0	0	0	0	0
ONPG	0	0	20 %	0	50 %
Yellow pigment	50 %	60 %	0	60 %	0
Mannose	100 %	80 %	100 %	100 %	100 %

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