Antibiotic Sensitivities of Alken-Murray Bacterial Strains

KEY TO ANTIBIOTICS

AN	Amikacin	30 µg
AM	Ampicillin	10 µg
CF	Cephalothin	30 µg
CRO	Ceftriaxone	30 µg
C30	Chloramphenicol	30 µg
GM	Gentamicin	10 µg
MZ`	Mezlocillin	75 µg
S	Streptomycin	10 µg
TE	Tetracycline	30 µg
NN	Tobramycin	10 µg
CB	Carbenicillin	100 µg
KM	Kanamycin	30 µg

DESCRIPTION KEY:

S = SUSCEPTIBLE
I = INTERMEDIATE
R = RESISTANT

ORGANISM	**AN**	**AM**	**CF**	**CRO**	**C30**	**GM**	**MZ**	**S**	**TE**	**NN**	**C B**	**K M**
Acinetobacter sp. 171	S	I	R	I	R	S	R	I	I	S	S	S
Acinetobacter calcoaceticus, subsp. anitratus -305	S	I	R	R	R	S	R	I	I	S	I	S
Arthrobacter paraffineus 379	S	R	R	S	I	S	S	S	S	S		
Arthrobacter paraffineus 591	S	R	S	S	S	S	I	S	S	S	R	
Alcaligenes faecalis 260	S	S	S	S	I	S	S	I	S			
Bacillus amyloliquefaciens AMH 102		S	S	R	S	S			S			
Bacillus amyloliquefaciens AMH 104		S	S	R	S	S			I			
Bacillus amyloliquefaciens AMH 107		S	S	I	S	S			S			
B. amyloliquefaciens AMP 100		S	S		S	S		S	S	S		S
B. amyloliquefaciens AMP 104		S	S		S	S		S	S	S		S
B. amyloliquefaciens AMV119-S		S	S		S	S		S	S	S		S

ORGANISM	AN	AM	CF	CRO	C30	GM	MZ	S	TE	NN	C B	K M
B. amyloliquefaciens 385		S	S			S		S	S			
B.amyloiliquefaciens AMV 407	S		S	S	S	S	S	S	S	S		
B. amyloliquefaciens 842		S	S		I	S		S	S	S		S
B. amyloliquefaciens 843	S	S	S	R	R	S	S	S	S	S	I	
B. amyloliquefaciens AMV 923		S	S		S	S		R	S	S		S
Bacillus cereus AMH 101		S	S	R	S	S			S			
Bacillus cereus AMH 116		S	S	R	S	S			S			
Bacillus cereus AMH 121		R	R	R	S	S			S			
Bacillus cereus AMV 200		R	S	S	S	S			S			
B. laevolacticus 387	S	R	S			S						
B. laevolacticus 494		R	R			S		S	S			
B .licheniformis 121	S	S	S		I	S	S	S	S	S		S
B. licheniformis AMV 134S		S	S		S	S		S	S	S		
B. licheniformis 406		R	S		S	S		S	S	S	S	
B. licheniformis 634		R	S	S	S	S		S	S			
B. licheniformis 713		S	S	S	S	S						
B. licheniformis 811	S	S	S	S	R	S	S	S	S	S	S	
B. megaterium AMH 106		S	S	I	R	S			S			
B. megaterium 112		R	R			S		S	S			
B. megaterium AMC 300		S	S		S	S		S	S			S
B. megaterium 561		R	R			S		S	S			
B. megaterium 581		R	R			S		S	S			
B. mojavensis AMH 100		S	S	R	R	S			S			
B. mojavensis AMH 108		S	S	I	S	S			I			
B. mojavensis AMH 118		S	S	R	R	S			S			
B. pumilus AMH 105	S	S	S	R	R	S			I			
B. pumilus AMH 109		S	S	I	R	S			S			
B. pumilus AMH 111		S	R	R	R	S			S			
B. pumilus AMH 114		S	R	R	S	S			S			

ORGANISM	AN	AM	CF	CRO	C30	GM	MZ	S	TE	NN	CB	KM
B. pumilus AMH 115		S	S	I	R	S			S			
B. pumilus AMH 119	S	S	I		S	S		S	S			S
B. pumilus AMV 121S		S	S		S	S		S	S	S		S
B. pumilus AMT 304		S			S	S		S	S			S
B. pumilus AMT 308H		S	S		S	S		S	S	S		S
B. pumilus AMT 310H		S	S		S	S		S	S	S		S
B. subtilis 003	S		S	S	S	S	S	S	S	S		
B. subtilis 051A		R	S			S		S	I			
B. subtilis AMV 359		S	S		S	S		I	I	S		S
B. subtilis 405	S	S	R	S	S	S	S	S		S		
B. subtilis 505	S	R	R	R	R	S	S	R	I	S	I	
B. subtilis, spizizenii 633	R	R	S	S		S	S	S	S			S
Bacillus sp. AMH 103		S	S	R	I	S			I			
Bacillus sp. (cellulase) 226	S		S	S	R	S	S	S	I	S		
Bacillus sp. 387	S	S	S	S	R	S	S	S	S	S		
B. thuringiensis 367		R	R		S	S						S
B. thuringiensis 679		R	R		S	S						S
B. thuringiensis 866	S	R	R		S	S						S
B .thuringiensis AMC 872		S	S	R	S	S			S			
Brevibacillus parabrevis AMT 306H		S	S		S	S		R	S	R		R
Enterobacter cloacae 411	S	R	R	S	S	S	S	S	S	S	S	S
Enterobacter cloacae 613	S	S	S	S	S	S	S	S	S	S		
Enterobacter cloacae 929	S	R	R	S	S	S	S	S	S	S		
Enterobacter cloacae 930	R	S	S	S	S	R	S	R	S	R	S	
Enterobacter cloacae 962	S	S	S	S	R	S	S	S	S	S		
Escherichia hermanii 368	S	S	S	S	S	S	S	S	S	R		
Marinobacter hydrocarbonoclasticus 132	S	R	R	I	R	S	S	S	R	S	I	R

ORGANISM	AN	AM	CF	CRO	C30	GM	MZ	S	TE	NN	CB	KM
Marinobacter hydrocarbonoclasticus 189	S	R	R	I	S	S	R	R	S	S	I	S
Marinobacter hydrocarbonoclasticus 840	S	R	S	I	S	S	S	S	R	I	I	S
*Nitrosomonas europaea 978			S	S				S	R			
*Nitrobacter winogradskyl 391			S	S				S	R			
Paenibacillus polymyxa 525	S	I	I	S		S		S	S	S		
Paracoccus denitrificans 367		S	S		S	S		S	S			S
Paracoccus pantotrophus 512		S	I		S	S		S	S			S
P. aeruginosa PS 370	S	R	R	I	R	S	S	I	R	S		
P. aeruginosa 371	S	R	R	R	R	S	S	R	I	S		
P. aeruginosa 423	S	R	R	I	R	S	S	S	R	S	S	
P. aeruginosa 480	S	R	R	S	R	S	S	I	I	S		
P. aeruginosa 482	S	R	R	S	R	S	S	I	R	S		
P. aeruginosa 622	S	R	R	R	R	S	S	R	I	S	I	
P. aeruginosa 988	S	R	R	R	R	S	R	R	R	S	I	
P. aeruginosa AMN 014	S	R	R	I	S	S	S			S	S	R
P. fluorescens 172	S	S	S	S	S	S	S	S	I	S		
P. fluorescens 461	S	R	R	S	R	S	S		R	S	I	S
P. fluorescens 842	S	R	R	I	R	S	S	R	R	S	I	R
P. fluorescens 843	S	R	R	I	R	S	S	R	R	S	I	R
P. fluorescens 858	S	R	R	S	S	S	S	I	S	S	R	S
P. fluorescens 949	S	R	R	S	R	S	S		R	S	I	S
P. fluorescens A 036	S	R	R	S	R	S	S	I	R	S		
P. fluorescens C 400	S	R	R	S	I	S	S	S	S	S	R	S
P. fluorescens F 513	S	R	R	R	R	S	R	R	R	S	I	R
P. nitroreductans	S	R	R	S	R	S	S	S	I	S		
P. pseudoalcaligenes 437	S	R	R	S	I	S	S	S	I	S	S	S

ORGANISM	AN	AM	CF	CRO	C30	GM	MZ	S	TE	NN	C B	K M
P. putida 007	S	R	R	I	R	S	S	S	S	S	R	S
P. putida 008	S	R	R	S	R	S	S	S	S	S	R	S
P. putida 088	S	R	R	R	R	S	S	R	I	S	I	
P. putida 151	S	R	R	I	R	S	R	I	R	S	R	S
P. putida 172	S	R	R	I	R	S	S	I	R	S	R	S
P. putida 250	S	R	R	S	I	S	S	S	S	S	R	S
P putida 359	S	R	R	S	R	S	S	I	I	S	R	S
P. putida 369	S	R	R	I	R	S	S	I	R	S	R	S
P. putida 412	S	R	R	I	R	S	S	S	R	S	R	S
P. putida 451	S	R	R	S	S	S	S	S	S	S		
P putida 472	S	R	R	I	R	S	R	I	R	S	R	S
P. putida 478	S	R	R	I	R	S	R	I	R	S	R	S
P. putida 479	S	R	R	I	R	S	S	S	I	S	R	S
P. putida 483	S	R	R	I	R	S	S	S	I	S	R	S
P. putida 484	S	R	R	I	R	S	S	S	I	S	R	S
P. putida 633	S	R	R	I	R	S	R	I	R	S	R	S
P. putida (toluene) 758	S	R	R	S	R	S	S	S	I	S	R	S
P. putida 795	R	S	S	I	S	R	S	R	S	R	S	
P. putida 800	S	R	R	S	I	S	S	S	S	S	R	S
P. putida 801	S	R	R	S	S	S	I	I	R	S	R	S
P. putida 807	S	R	R	I	R	S	S	S	R	S	I	S
P. putida N-51	S	R	R	S	R	S	S	I	R	S	R	S
P. stutzeri 405	S	R	R	I	R	S	S	S	R	S	R	S
P. testosteroni 911	S	R	R	I	R	S	S	S	R	S	R	S
Rhodococcus pyridinivorans 419		R	S			S		S	S			
Sporosarcina pasteurii 386	S	I	I			S		S	S			
Sporosarcina pasteurii 453	S	R	R			S		S	S			
Starkeya novella 093		S	S	R	I	S			S			
Sphingomonas paucimobilis 829	S	S	R	R	S	S	R	R	S	S	R	S

ORGANISM	AN	AM	CF	CRO	C30	GM	MZ	S	TE	NN	C B	K M
Sphingomonas yanoikuyae 230	S	R	R	R	S	S	R	R	S	S	R	S
Streptomyces viridosprorus 470	S	S	S	S	R	S	S	S	S	S	S	

Additional Antibiotics tested for some strains:

KEY TO ANTIBIOTICS

CC	Clindamycin	2 μg
E,	Erythromycin	15 μg
OX	Oxacillin	1 μg
PG	PenicillinG	10 ug
SX	Sulfisoxazole	250 μg (0.25 mg)
AMC	Amoxicillin/Clavulanic acid	30 μg/10 μg
VA	Vancomycin	5 μg
LI	Lincomycin	2 μg
N	Neomycin	30 μg
NB	Novobiocin	30 μg
ENF	Enrofloxacin	5 μg
AZM	Azithromycin	15 μg

DESCRIPTION KEY:

S = SUSCEPTIBLE
I = I INTERMEDIATE
R = RESISTANT

ORGANISM	CC	E	OX	PG	SX	AMC	VA	LI	N	NB	ENF	AZM
Acinetobacter sp. 171				S	S	S						
Acinetobacter calcoaceticus, subsp. anitratus -305				R	S	S						
Bacillus amyloliquefaciens AMH 102	S	S		S	S		S	I				
Bacillus amyloliquefaciens AMH 104	S	I		S	S		S	R				
B. amyloliquefaciens AMH 107	S	R		S	S		S	R				
B. amyloliquefaciens AMP 100		S		S	S		S					
B. amyloliquefaciens AMP 104		S		S	S		S					
B. amyloliquefaciens AMV 119S		S		S	S		S					
B. amyloliquefaciens AMV 923		S		S	S	S	S					
B. amyloliquefaciens 385	I	S	S	S	S	S	S	S				

ORGANISM	CC	E	OX	PG	SX	AMC	VA	LI	N	NB	ENF	AZM
B. amyloliquefaciens 842		S		S	S	S	S					
B. amyloliquefaciens 843	I	S	S	S	S	S	S	R				
Bacillus cereus AMH 101	S	I		S	R		S	R				
Bacillus cereus AMH 116	S	I		S	R		S	R				
Bacillus cereus AMH 121	S	R		I	R	R	S	R				
Bacillus cereus . AMV 200	S	S		S	S	R	S	S				
B. licheniformis AMV 134S	R	S	S	R	S	S	S					S
B. licheniformis AMV 134S	R	S	S	R	S	S	S					S
B. licheniformis 713				S			S					
B. megaterium AMH 106	S	R		S	S	S	S	I				
B. megaterium 112		S	R	R	S	S	S					R
B. megaterium AMC 300	R	S	R	S	S	S	S	R	S	S		R
B. megaterium 561	R	S	S	R	S	S	S					S
B. megaterium 581	R	S	S	R	S	S	S					S
B. mojavensis AMH 100	S	R		S			S	R				
B .mojavensis AMH 108	S	R		S	S		S	R				
B. mojavensis AMH 118	S	R		S	S	S	S	R				
B. pumilus AMH 105	S	S		S	S		S	R				
B. pumilus AMH 109[1]	S	R		S	R	S	S	R				
B. pumilus AMH 111[2]	S	R		S	S		S	R				
B. pumilus AMH 114	R	R		S	R	S	S	R				
B. pumilus AMH 115	S	R		S	S	S	S	R				
B. pumilus AMH 119	S	S	S	S	S	S	S	S	S	S		S
B. pumilus AMV 121S		S		S	S		S					
B. pumilus AMT 304		S		S	S		S	S				
B. pumilus AMT 308H		S		S	S		S					
B. pumilus AMT 310H		S		S	S		S					
B. subtilis 051A	S	S	S	S	S	S	S					

ORGANISM	CC	E	OX	PG	SX	AMC	VA	LI	N	NB	ENF	AZM
B. subtilis AMV 359		S		S	S		S					
B. subtilis 633		R		S		R	S	R	S			
Bacillus sp. AMH 103	S	R		S	S		S	S				
B. thuringiensis 367	S	S		R	S	S	S					
B. thuringiensis 679	S	S		R	S	S	S					
B. thuringiensis AMC 872	S	R		S	I	S	S	R				
Brevibacillus parabrevis AMT 306H		S		S	R		S					
AMN 452	S	S	S	S	S	S						
Marinobacter hydrocarbonoclasticus 132		S		S						R		
Marinobacter hydrocarbonoclasticus 189		S		S						R		
Marinobacter hydrocarbonoclasticus 840[3]		S		S						R		
*Nitrosomonas europaea 978	S	S		S	S	R		S				
*Nitrobacter winogradskyl 391	S	S		S	S	R		S				
Paracoccus denitrificans 367	S	S	S	S	S	S		S	S	S		S
Paracoccus pantotroohus 512	S	S	S	S	S	S		S	S	S		S
Rhodococcus pyridinivorans 419	I	S	R	R	R	S	S					
Sporosarcina. pasteurii 453	S	S	R	R	R	R	S					
Starkeya novella 093	S	R		S	R	S		R				

NOTES PERTAINING TO ANTIOBIC SENSITIVITY TABLES

1. B. pumilus AMH109 is also susceptible to Nalidixic acid.

2. B. pumilus AMH 111 is also sensitive to Polymyxin B.

3. M. hydrocarbonoclasticus 840 is also susceptible to Nalidixic acid and resistant to Oleandomycin, Staphylomicin and Vibriostatic agent

4. B. subtilis 633 is also sensitive to Nalidixic acid, Oxytetracycline and Sulbactam and is resistant to Ofloxacin, results reported in *Comparative Study of Probiotic Cultures to Control Growth of Escherichia coli O156:H7 and Salmonella typhimurium* by Moustafa Y. M. El-Naggar, Biotechnology V 2, Issue 3 2004, pp. 174 - 180

INTERNAL IDENTIFICATION CODES AND NUMBERS
When Alken-Murray began isolating and maintainig live bacterial cultures, for research and future production of commercial bioremediation and probiotic products, each new isolate was assigned a 3 digit identification NUMBER for better record-keeping, with NO repetition of numbers within the same genus-species combination. More recently isolated strains are assigned an Alken-Murray three-letter prefix, that begins with the abbreviation for Alken-Murray itself "AM". A third letter is then selected, either to indicate something about the site of isolation or about one of more of the strains belonging to that group. As of December 2006, six (6) prefixes beginning with AM have been assigned, as follows:
AMC= Two unrelated strains got assigned to AMC & stayed there - NOT related, they are AMC 300 & AMC 872.
AMH= Alken-Murray strains isolated from **H**umified peat-soil in Georgia, USA
AMN= Alken-Murray strains isolated from environment in **N**ew York, USA
AMP= Alken-Murray strains isolated from **P**ine forest in Houston, Texas, USA
AMT= Alken-Murray strains isolated from refinery wastewater in Houston, **T**exas, USA
AMV = Alken-Murray strains isolated from various locations in **V**irginia, USA

Public culture collections take on the massive responsibility of accepting, growing, protecting, storing and providing small vials of valuable cultures from researchers worldwide. Such deposits are REQUIRED to allow a patent examiner to verify the claims asserted about a strain in a patent application. When a researcher believes that he/she has isolated a new genus or species, the authorities that grant approval for such naming policies, generally require that small freeze-dried plugs of the "new" strain be placed on deposit with three different culture collections, with at least one of those OUTSIDE the country of origin, all designed to make it easier for the scientific community to expand their knowledge, while preserving biodiversity. When a public culture collection accepts the responsibility of protection, growth and preservation of a strain, they first verify that it was received alive, then grow it up, freeze-drying small vials for future distribution. The freeze-dried vials can then be ordered by the original depositor, as needed, or if the strain is patented, it may be ordered by patent examiners to verify new patents. Alken-Murray's most valuable strains ARE accessioned at either the ARS (Agricultural Research Service, the first USA culture collection) or at ATCC, the world-famous American Type Culture Collection. Since public culture collections verify both viability (survival) of strains they accession and sufficient information about the safety of the genus and species involved to assure themselves that the submitted culture is safe for their staff to handle,, some import authorities are reassured that commercial cultures known to be accessioned by a public culture collection can simply be accepted as "safe" when they submit accession numbers for those cultures, along with normal import application documentation requested by that authority. To help our distributors and "private-label" direct clients obtain the fastest import licensing, Alken-Murray is willing to share our "confidential specifications sheets", which provide in-depth profiling of each strain, including primary and secondary enzymes, antibiotic sensitivity (taken from this table). An accession list for the specific product will be placed on its last page of the "Confidential Specifications Sheet", once the import authorities sign and return a copy of our "trade-secret agreement", agreeing that anyone requiring to study our confidential information will use that information ONLY to verify safety of our products and further to protect such information from any potential competitor or potential counterfeiter. Below are three examples of the proper reporting of bacterial strains that are accessioned to public culture collections.
FIRST IS A SINGLE STRAIN DEPOSITED AT ATCC
Bacillus thuringiensis, subspecies israelensis, strain AMC 872 **Accession # ATCC 700872**
THE NEXT ARETWO STRAINS DEPOSITED AT ARS
Bacillus amyloliquefaciens, strain AMV 923 **Accession # NRRL B-30741**
Bacillus pumilus, strain AMH 115 **Accession # NRRL B-30732**

If the above-listed trio of strains represented a complete formula,

ANTIBIOTIC SENSITIVITY TESTING PROTOCOLS USED:
KIRBY-BAUER
Zones of inhibition were read and compared with the values of susceptibility interpretive breakpoints issued by the National Committee for Clinical Laboratory Standards (NCCLS) to determine the degree of sensitivity to each antibiotic tested on each strain tested, following18 hours of incubation at 35°C on BBL Mueller Hinton or Mueller-Hinton II Agar, plated 4 mm deep on 100 or 150 mm agar plates, following the Kirby-Bauer test protocol, using aseptic techniques. Plated Mueller-Hinton agar was obtained from Culture Media & Supplies, Oswego, IL, USA or was prepared by Alken-Murray laboratory technicians, according to directions on the bottle of BBL Mueller-Hinton II agar, using aseptic techniques and autoclaving at 121°C at 15 psi for 15 minutes, cooled to 50°C and plated aseptically. BBL Sensi-discs (antibiotics) were purchased from Hardy Diagnostics in California, USA or Culture Media & Supplies in IL, USA. Strains were brought to a uniform density by aseptically diluting 24 hour colonies grown on TSA or Nutrient Agar in 5 ml bioMerieux sterile 0.85% saline ampules until they matched McFarland Standard 0.5 (purchased as part of bioMerieux McFarland Standard set or else prepared fresh by an AMC laboratory technician, with accuracy verified with a Perkin-Elmer Lambda 2 dual beam spectrophotometer, with a reading at 625 nm, of 0.08 to 0.1 and/or a reading at 550 nm of 0.125, prior to inoculation. Mueller-Hinton agar plates were inoculated using sterile cotton swabs in the confluent pattern, prescribed in the Kirby-Bauer procedure, included with the BBL Sensi-Disks and further detailed in Alken-Murray QC 117. Zones of inhibition were measured using a metric caliper or transparent ruler, while viewing the plates with a Quebec Darkfield colony counter. A positive control of inoculation procedure, with no antibiotic discs applied was used for each round of testing to verify proper inoculation protocol. Control strains

suggested for each vial of antibiotic discs, by manufacturer BBL, (50 discs per vial) were used to verify performance of antibiotic discs. Results were rounded to the nearest whole number, using standard conventions for rounding numbers (any number below ½ higher than the lower number was rounded down and any number above ½ was rounded up).

KIRBY-BAUER MODIFICATIONS FOR TESTING NITRIFIERS
Since nitrifier species (Nitrosomonas, Nitrobacter, Nitrosococcus and Nitrospira) are unable to utilize an organic source of carbon, Mueller-Hinton or Mueller-Hinton II agars cannot be used as a growth substrate for them. This also makes it impossible for them to infect any species of living organism. AMC's QC 2 (named STP broth) was modified by adding 17 g agar to 500 ml distilled water and label Solution E. All solutions were autoclaved for 15 minutes at 121°C (15 lbs. pressure. After cooling to 50°C, components were combined, altering the recipe by adding 3 ml/L of Solution D, the phenol red indicator dye solution, to make it easier to visualize results. Before pouring, pH was adjusted to 7.75 ± 0.15 and was then plated 4 mm deep in 100 mm sterile disposable polystyrene agar plates from Weber Scientific. *Nitrobacter winogradskyi* 391 and *Nitrosomonas europaea* 978 were diluted in a 5 ml of bioMerieux sterile saline solution ampule, matching density to bioMerieux McFarland Standards 0.5. Sterile cotton swabs were used to apply strains in the confluent pattern, prescribed in the Kirby-Bauer protocol. Four antibiotic discs were applied per inoculated STP agar. To compensate for lower incubation temperatures, required by nitrifier species, and slow germination and growth times, inoculated plates with antibiotic discs were incubated at 25° - 28°C for 48 hours. Results were determined colorimetrically. If agar under and around an antibiotic disc maintained a bright fuschia pink color, strain was reported as "Sensitive". If agar under and around an antibiotic disc turned yellow, result was reported as "Resistant" to the antibiotic tested. No intermediate state was verifiable using this procedure. Although nitrifiers are incapable of causing infection or growing inside any living organism, they were tested to comply with requests from a few international clients.

MINIMUM INHIBITORY CONCENTRATION (MIC)
Minimum Inhibitory Concentration (MIC) tests were performed on some strains by an independent laboratory. Levels of sensitivity were interpreted using National Committee for Clinical Laboratory Standards (NCCLS) standards to allow addition of these strains to these tables. To verify correlation, some strains originally tested using MIC protocol were retested using the Kirby-Bauer agar diffusion antibiotic sensitivity protocol.

This table was assembled using results reported by various laboratory technicians in bound laboratory notebooks. To improve clarity of the chart, the category "moderately susceptible" was eliminated. All old results classified as "moderately susceptible" were changed to "intermediate"

Official genus and species reassignments were made as they appeared in peer-reviewed microbiological journals. Old name = new name, as follows: Bacillus pasteurii = Sporosarcina pasteurii, Bacillus polymyxa = Paenibacillus polymyxa, Thiobacillus novellus = Starkeya novella, Micrococcus denitrificans 367 = Paracoccus denitrificans 367, Thiosphaera pantotropha 512 = Paracoccus pantotrophus 512, Pseudomonas testosteroni = Comomonas testosteroni, Corynebacterium nitrophilus 419 = Rhodococcus pyridinovorans 419

UPDATES
Initial update and alphabetical order indexing 07/07/2001

Update - 4/21/2002 - B. megaterium 112 and P. putida 633 added, 16S rRNA & FAME identification of species.

Update - 5/22/2002 - Bacillus cereus AMH 121, Bacillus pumilus. AMH 111, Bacillus cereus AMV 200 & Bacillus thuringiensis, subsp. israelensis AMC 872 were added to the tables. Oxoid Bacillus cereus Enterotoxin test performed for all B. thuringiensis and B. cereus strains. Positive results: B. cereus AMH 101, AMH 116; B .thuringiensis 367,679 and 866. Negative results: B. cereus AMH 121 and AMV 200; B .thuringiensis AMC 872

Update - 6/21/2002 - Bacillus mojavensis AMH 118, B. pumilus AMH 114, and B. pumilus AMH 119 were added to these tables. Bacillus pumilus AMH 115 was tested for antibiotic sensitivity to Trimethoprim/Sulfoxazole, with Sensitive response.

Update - 10/22/2002 - Starkeya novella 093 was added to the tables.

Update - 11/18/2002 - Bacillus amyloliquefaciens AMP100 and AMP104, Bacillus subtilis AMV359, Brevibacillus parabrevis AMV306-H, Bacillus pumilus AMV308-H and AMV 310-H were added to the tables.

Update - 12/2/2002 - Bacillus amyloliquefaciens 842, B. licheniformis AMV134-S, B. megaterium 254, B. pumilus AMV119-S and AMV 121-S, and B. amyloliquefaciens AMV 923 were added to tables.

Update - 1/5/2003 - Streptomyces viridosporus 479, Marinobacter hydrocarbonoclasticus 132, 189 and 840 were added to tables. Lactobacillus delbruckeii was removed and dropped from AMC collection for shelf-life and commercial fermentation issues.

Update - 03/17/2004 - Bacillus megaterium AMC 300 added. May be retested, since antibiotic discs were old when used.

Update 05/01/2004 - Certain Bacillus genus and species names changed according to new 16S rRNA test results from Accugenix Laboratories. Paenibacillus polymyxa AMV 407 = Bacillus amyloliquefaciens AMV 407, Bacillus subtilis AMV 923 = Bacillus amyloliquefaciens AMV 923

Update 12/4/2004 - Added B. megaterium 581 and Marinobacter hydrocarbonoclasticus 189.

Update 10/20/2005 - Second table was redone to include Neomycin, Novobiocin, Azithromycin, Enrofloxacin antibiotics (Zithromax & Baytril)

Update 11/15/2005 - Added Paracoccus denitrificans 367 and added tests for Bacillus megaterium AMC 300 and Bacillus pumilus AMH 119.

Update 11/17/2005 - Added Paracoccus pantotrophus 512 antibiotic sensitivity test results.

Update 12/1/2005 - Added retest of Bacillus megaterium AMC 300, Bacillus pumilus, strain AMH 119, Paracoccus pantotrophus 512 & Paracoccus denitrificans 367 for Clindamycin, Azithromycin. Oxacillin.. Confirmed Cephalothin & GentamIcin. Updated Bacillus subtilis, spizizenii 633 for Penicillin G., Tetracycline, Streptomycin, Erythromycin & Neomycin.
Update 05/37/2006 - Added Bacillus licheniformis 713 and Bacillus pumilus, strain AMT 304.
Update 12/11/2006 - At one time, Alken-Murray had two antibiotic sensitivity tables, one for Active, **Commercial Strains** and one for **Recent Isolates, Research Cultures and Abandoned/Lost Strains**. Gradually, as new strains graduated through research to commercial status, the present single table emerged, containing antibiotic sensitivity data for all strains that an Alken-Murray researcher could wish to screen for undiscovered talents in the future. Only a single strain managed to evade inclusion in this table, Acinetobacter calcoaceticus, subspecies anitratus, strain 305, which was reinserted into the table today.