

Antimicrobial groups approved for cattle:		
Antibiotic Class	Antibiotic Within Class	Mechanism
Aminocyclitols	Spectinomycin	PS
Aminoglycosides	Gentamicin, Neomycin	PS
Beta-lactams	Penicillin G, Ampicillin, Ceftiofur	CW
Chloramphenicol derivatives	Florfenicol	PS
Fluoroquinolones	Enrofloxacin, Danofloxacin	GR
Lincosamides	Lincomycin	PS
Macrolides	Erythromycin, Tilmicosin, Tulathromycin, Tylosin	PS
Sulfonamides	Sulfadimethoxine, Sulfamethazine, Sulfachlorpyridazine	MP
Tetracyclines	Oxytetracycline, Chlortetracycline	PS

CW	cripling production of the bacterial cell wall that protects the cell from the external environment
PS	interfering with protein synthesis by binding to the machinery that builds proteins, amino acid by amino acid
MP	wreaking havoc with metabolic processes , such as the synthesis of folic acid, that bacteria need to thrive
GR	blocking genetic replication by interfering with synthesis of DNA and RNA

Antibiotic Resistance Mechanisms	
Decrease Cell Wall Uptake / Perm:	► Aminoglycosides
Efflux:	► Macrolides, fluoroquinolones, tetracyclines
Enzymes Induced:	► Aminoglycosides, florfenicol, beta-lactams
Altered Target Binding Sites:	► Ribosome ... macrolides, Lincosamides ► Wall Protein ... beta-lactams, glycopeptides ► DNA ... fluoroquinolones
Gene Resistance:	► Plasmids (b-lact, tetra, macro, linco, fluro, sulfa), ► Transposons (b-lactams, glycopeptides), ► Chromosome (b-lactams, FQs)

PK / PD Relationships (See www.vads.org for more information)		
PK to PD Predictive Relationships	Antibiotic Class	Examples
T (50%) > MIC	Beta-lactams	Ampicillin, Amoxicillin, Ceftiofur, PenG
T (50 to 100%) > MIC	Macrolides	Erythromycin, Lincomycin, Tilmicosin?, Tylosin
T (100%) > MIC	Phenol, Lincosa, Tetracy, Sulfas	Florfenicol, Lincomycin, Oxytetracycline, Sulfas
Peak or Cmax (10x) / MIC	Aminoglycosides	Gentamicin, Neomycin
AUC/MIC (>100 x = efficacy) Cmax/MIC (< 4 to 8 x = resistance)	Fluoroquinolones	Danofloxacin, Enrofloxacin
AUC/MIC (>100 x)	Macrolides	Tulathromycin?
No Information Available ... PK / PD Not Predictive	Aminocyclitols	Spectinomycin

Key Cattle Antibiotic Pharmacodynamic and Pharmacokinetic Parameters

Generic Name	NADA#	PK/PD	ACT	LS	Vd	TM	CM	AUC	T½	Dose	PB %	MIC90 Mh	MIC90 Pm	MIC90 Hs	WD
Ampicillin (Polyflex)	055-030	T>MIC	C	L	L	*	10	*	1.2	10	15-20	32	8	4	6
Amoxicillin	055-089	T>MIC	C	L	L	*	10	*	5	5	~40?	16	16	8	25
Ceftiofur Na (Naxcel)	140-338	T>MIC	C	L	L	1.2	14	115	10	1	80-90	0.03 (0.2) ^{tt}	0.03 (0.2) ^{tt}	0.03 (0.2) ^{tt}	4
Ceftiofur HCl (Excenel)	140-890	T>MIC	C	L	L	2.5	11	160	12	1	80-90	0.03 (0.2) ^{tt}	0.03 (0.2) ^{tt}	0.03 (0.2) ^{tt}	3
Ceftiofur cryst acid (Excede)	141-209	T>MIC	C	L	L	19	6.4	376	50	3	80-90	0.03 (0.2) ^{tt}	0.03 (0.2) ^{tt}	0.03 (0.2) ^{tt}	13
Chlortetracycline (feed) CTC	048-761	T>MIC	S	M	M	10.2	0.21	4.3	15.7	10	47-54	4	4	2	0
Danofloxacin ** (A180)	141-207	A ^{UC} /MIC	C	M?	H	3.2	1.3	9	4.5	2.7	40-50	0.06	0.02	0.06	4
Enrofloxacin ** (Baytril)	141-068	A ^{UC} /MIC	C	M	H	5.8	1.8	19	6.4	5.7	54-61	0.06	0.03	0.03	28
Florfenicol (Nuflor)	141-063	T>MIC	S	H	H	5.3	5.4	71	18.3	18	15-20	1	1	0.5	38
Gentamicin ** Do Not Inject	101-862	C ^{Max} /M _c	C	H	L	*	<8	*	2	1	~30?	8	4	16	>730?
Neomycin ** Do Not Inject	200-113	C ^{Max} /M _c	C	L	L	*	10	*	2.5	2	~45	64	64	64	>730?
Oxytetracycline (LA)***	Many	T>MIC	S	M	M	1.8	3.6	72	21	9	18-22	12	12	12	36
Oxytetracycline (feed)	008-804	T>MIC	S	M	M	2	0.16	4	9	10	18-22	12	12	12	0
Pen G, Benzathine (LA Pen)	Many	T>MIC	C	L	L	*	1.7	*	60	10k	28	16	8	16	>180?
Pen G, Procaine	Many	T>MIC	C	L	L	*	3.4	*	5.2	10k	~28?	16	8	16	>60?
Spectinomycin (Adspec)	141-077	?	S	L	L	1	20	77	1.8	5.5	~6	96	96	96	11
Sulfa-diamethoxine (IV)Albon	041-245	T>MIC	S	L	L	*	8.9	*	13.1	25	75-85	350	350	350	5
Sulfa-diamethoxine (oral)	093-107	T>MIC	S	L	L	*	8.9	*	13.1	62.5	75-85	350	350	350	21
Sulfa-methazine	140-270	T>MIC	S	L	L	*	16	*	12.9	200	75-85	350	350	350	12
Tilmicosin (Lung CM) Micotil	140-929	T>MIC	S	H	H	1.4	1 (9)	8	~24	4.5	~17?	16	32	8	28
Tulathromycin (Draxxin)	141-244	A ^{UC} /MIC	*	H	H	0.25 L24	3.8 +/- 0.4	16.7 L1.2k L185	90	1.1	40	2	1	4	18
Tylosin (Tylan 200)	012-965	T>MIC	S	H	H	1.3	4.7	29	24	8	33-44	32	32	16	28

* No available data ** Not AMDUCA approved ELDU or BOA *** LA = long acting formulations designed for >72 hrs PTI
 ACT: action listed as either (C) cidal or (S) static LS: lipid soluble (L = Low, M = Moderate, H = High)
 Vd: Volume of distribution (L = <0.5, M = 0.5-1.0, H = > 1.0) see LS
 Dose: refers to typical dose (mg/lb body weight) and is listed as the maximum label approval
 TM: TMAX- Time corresponding to half life (T ½) CM: Cmax=Peak ppm concentrations (ppm=ug/ml)
 AUC: Area Under the Curve (mcg x hr / ml) T: Time, T½ Life: Half-life in hours (T½)

MIC listings are all for concentrations greater than the values listed as MIC 90% [http:// www.vads.org](http://www.vads.org) ^{tt} therapeutic threshold
 Ref: Dx lab data, Iowa State University 2000-2003 for 90% of isolates, FDA NADA FOI, & Shryock J Vet Diag Invest 8:337 (96)

WD: withdrawal days before marketing for food. The longest label WD is listed. ? is estimate from FARAD information.

AMDUCA ELDU requires the adjustment so that no violative residues would be detected.

? = WD adjustments of antibiotics for which ELDU has been practiced.

NOTE: Use the PHARMACOKINETICS, PHARMACODYNAMICS, & MIC information only as a starting guide.

Therapeutic regimen management requires response monitoring through accurate case definition, protocol adherence, record examination and outcome follow-up. Additional Info from [Http://www.VADS.org](http://www.VADS.org) & [Http://www.USP.org/audiences/veterinary/monographs/main.html](http://www.USP.org/audiences/veterinary/monographs/main.html)



	P. multocida (498) MIC Incidence Cumulative	M. haemolytica (481) MIC Incidence Cumulative	H. somni (208) MIC Incidence Cumulative	S. typhimurium (66) MIC Incidence Cumulative	E. coli (K99 pos) (173) MIC Incidence Cumulative	
Amphic	0.25 90.56% 90.56%	0.25 72.35% 72.35%	0.25 92.31% 92.31%	0.25 1.52% 1.52%	0.25 0.00% 0.00%	
	0.5 3.01% 93.57%	0.5 0.62% 72.97%	0.5 4.33% 96.63%	0.5 0.00% 1.52%	0.5 0.00% 0.00%	
	1 1.20% 94.78%	1 0.21% 73.18%	1 1.44% 98.08%	1 7.58% 9.09%	1 0.00% 0.00%	
	2 0.60% 95.38%	2 0.42% 73.60%	2 0.00% 98.08%	2 1.52% 10.61%	2 6.94% 6.94%	
	4 0.60% 95.98%	4 0.62% 74.22%	4 0.96% 99.04%	4 4.55% 15.15%	4 2.31% 9.25%	
	8 1.41% 97.39%	8 2.70% 76.92%	8 0.00% 99.04%	8 0.00% 15.15%	8 0.00% 9.25%	
	16 0.40% 97.79%	16 5.82% 82.74%	16 0.00% 99.04%	16 0.00% 15.15%	16 0.58% 9.83%	
	32 2.21% 100.00%	32 17.26% 100.00%	32 0.96% 100.00%	32 84.85% 100.00%	32 90.17% 100.00%	
Ceftio	0.5 99.20% 99.20%	0.5 99.38% 99.38%	0.5 98.56% 98.56%	0.5 75.76% 75.76%	0.5 48.55% 48.55%	
	1 0.40% 99.60%	1 0.21% 99.58%	1 1.44% 100.00%	1 21.21% 96.97%	1 1.73% 50.29%	
	2 0.20% 99.80%	2 0.00% 99.58%	2 0.00% 100.00%	2 1.52% 98.48%	2 0.00% 50.29%	
	4 0.00% 99.80%	4 0.21% 99.79%	4 0.00% 100.00%	4 0.00% 98.48%	4 7.51% 57.80%	
	8 0.00% 99.80%	8 0.00% 99.79%	8 0.00% 100.00%	8 0.00% 98.48%	8 25.43% 83.24%	
	16 0.20% 100.00%	16 0.21% 100.00%	16 0.00% 100.00%	16 1.52% 100.00%	16 16.76% 100.00%	
	Enroflox	0.12 95.58% 95.58%	0.12 92.93% 92.93%	0.12 99.52% 99.52%	0.12 98.48% 98.48%	0.12 61.85% 61.85%
		0.25 1.20% 96.79%	0.25 1.66% 94.59%	0.25 0.48% 100.00%	0.25 1.52% 100.00%	0.25 0.00% 61.85%
0.5 1.00% 97.79%		0.5 2.29% 96.88%	0.5 0.00% 100.00%	0.5 0.00% 100.00%	0.5 0.58% 62.43%	
1 1.20% 99.00%		1 1.25% 98.13%	1 0.00% 100.00%	1 0.00% 100.00%	1 0.00% 62.43%	
2 0.60% 99.60%		2 0.42% 98.54%	2 0.00% 100.00%	2 0.00% 100.00%	2 0.00% 62.43%	
4 0.40% 100.00%		4 1.46% 100.00%	4 0.00% 100.00%	4 0.00% 100.00%	4 37.57% 100.00%	
Florfen		0.25 17.07% 17.07%	0.25 0.62% 0.62%	0.25 89.42% 89.42%	0.25 0.00% 0.00%	0.25 0.00% 0.00%
		0.5 69.48% 86.55%	0.5 68.19% 68.81%	0.5 3.37% 92.79%	0.5 0.00% 0.00%	0.5 0.00% 0.00%
	1 4.22% 90.76%	1 26.40% 95.22%	1 3.85% 96.63%	1 1.52% 1.52%	1 0.00% 0.00%	
	2 0.60% 91.37%	2 1.66% 96.88%	2 1.44% 98.08%	2 25.76% 27.27%	2 4.05% 4.05%	
	4 3.41% 94.78%	4 0.62% 97.51%	4 1.44% 99.52%	4 54.55% 81.82%	4 27.17% 31.21%	
	8 3.61% 98.39%	8 0.62% 98.13%	8 0.48% 100.00%	8 3.03% 84.85%	8 4.05% 35.26%	
	16 1.61% 100.00%	16 1.87% 100.00%	16 0.00% 100.00%	16 15.15% 100.00%	16 64.74% 100.00%	
	Oxytet	0.25 15.46% 15.46%	0.25 4.37% 4.37%	0.25 36.54% 36.54%	0.25 0.00% 0.00%	0.25 0.00% 0.00%
0.5 30.52% 45.98%		0.5 40.54% 44.91%	0.5 23.08% 59.62%	0.5 1.52% 1.52%	0.5 0.00% 0.00%	
1 10.44% 56.43%		1 2.49% 47.40%	1 3.37% 62.98%	1 0.00% 1.52%	1 0.58% 0.58%	
2 3.01% 59.44%		2 0.83% 48.23%	2 0.00% 62.98%	2 13.64% 15.15%	2 2.31% 2.89%	
4 1.41% 60.84%		4 2.70% 50.94%	4 2.88% 65.87%	4 3.03% 18.18%	4 0.00% 2.89%	
8 2.81% 63.65%		8 14.55% 65.49%	8 13.46% 79.33%	8 0.00% 18.18%	8 0.00% 2.89%	
16 36.35% 100.00%		16 34.51% 100.00%	16 20.67% 100.00%	16 81.82% 100.00%	16 97.11% 100.00%	

Withdrawal (WD) Table for Common Cattle Animal Health Products

- ✓ All WD times must be figured from the last day of treatment and for the longest WD of the list of products used.
- ✓ If multiple doses of a single product is given the WD time should be the sum of the WD days for each administration. Example; Consider an antibiotic intended for a single application that has a 28 day WD. If a 2nd dose is given 3 days after the 1st dose, the WD would be $(28 - 3) + (28) = 53$ days from the last injection.
- ✓ Giving greater than 10 CC per IM site will increase the potential for a violative residue.
- ✓ Off label use of non-feed medications requires a veterinary prescription and the withdrawal time must be extended to insure no violative residues will be found.
- ✓ Generally, the extended withdrawal a veterinarian may assign will be at least an additional 60 days above the label withdrawal.
- ✓ Off label use of feed additives violates federal law and is strictly forbidden.

Animal Health Product NA = Not Approved	Withdrawal		Animal Health Product NA = Not Approved	Withdrawal	
	Milk (hrs)	Meat (days)		Milk (hrs)	Meat (days)
All Non-Oil Adjuvant Vaccines	0	21	A180	NA	4
Oil Adjuvant Vaccines	0	60	Adspec	NA	11
			Albon Injectable & Albon SR boluses	60 / NA	5 / 21
All Growth Promotant Implants	NA	0	Amoxi-inject	96	25
Lutalyse (IM only in the neck)	0	0	Aureomycin	NA	1
MGA and Optaflexx	NA	0	Baytril 100	NA	28
			Bio-Mycin 200	96	28
Antihistamine	24	4	Draxxin	NA	18
Banamine (Flunixin), Avoid IM, SubQ 10 days	36	IV = 4	Excede (ear route of administration)	0	13
Steroids (Azium or Predef)	0	0 or 7	Excenel RTU	0	3
Therabloat	0	0	Gentamicin (Never Inject) ... 2 + years withdrawal !!!	NA	2+Yrs
Vit A,D,E,K & B complex (5 cc/site)	0	0	Liquamycin LA 200	96	28
			Micotil 300	NA	28
Corid (coccidia oral drench)	NA	1	Naxcel	0	4
Curatrem (flake oral drench)	NA	8	Neomycin, ONLY ORAL, Never Inject	NA	1
Cydectin (pour on)	0	0	Nuflor, SubQ	NA	38
Cydectin (injectable)	NA	21	Polyflex	48	6
Dectomax (pour on)	NA	45	Penicillin G, Procaine ... (off label 60+)	48	10
Dectomax (injectable)	NA	35	Penicillin G, Benzathine (Long Acting)...(off label 180+)	NA	30
Eprinex (pour on)	0	0	Sulfamethazine	NA	12
Ivomec (pour on)	NA	48	Terramycin Soluble Powder	NA	5
Ivomec (injectable)	NA	35	Tetradure	NA	28
Ivomec Plus (Injectable)	NA	49	Tylan 200	NA	21
Levasole (injectable)	NA	7	Vetisulid	NA	7
Levasole (oral)	NA	2			
Safeguard (oral)	0	8	Co-Ral	0	0
Syanthic (oral)	NA	7	Atroban, Boss, Cylence, Durasect	0	0
Valbazen	NA	27	Saber, Permethrin, Ultra Boss	0	0
			Elector	0	2
Spectramast LC	72	0			
Spectramast DC	720+	16	ToDAY / Cefa-Lak	96	4
Quarter Master	96	60	ToMORROW / Cefa-Dri	72	42
Albadry	72	30	Pirsue	36	9
Biodry	720+	30	Dry-Clox	0	30
			Hetacin-K	72	10

Antibiotic Residue Avoidance Strategy

1. Identify all animals treated.
2. Record all treatments: Date; animal' ID; dose given; route of administration; person administering treatment; withdrawal time (WD).
3. Strictly follow label directions for product use.
4. Use newer technology antibiotics when possible.
5. Select antibiotics with short WD when equivalent.
6. Never give more than 10 cc per IM injection site.
7. Avoid Extra Label Drug Use (ELDU) of antibiotics.
8. Avoid using multiple antibiotics at the same time.
9. Don't mix antibiotics in the same syringe.
10. Check ALL medication/treatment records before marketing.

Antibiotic Residue Avoidance Strategy

1. Identify all animals treated.
2. Record all treatments: Date; animal ID; dose given; route of administration; the person who administered the treatment; withdrawal time (WD).
3. Strictly follow label directions for product use.
4. Use newer technology antibiotics when possible.
 - a. Reduce unwanted depot effect. Select low volume products when available.
 - b. Select generic medications and vaccines with EXTREME CAUTION.
 - c. Avoid inferior products. They may cause performance loss or damage quality.
5. Select with short WD when antibiotic choice is equivalent.
6. Never give more than 10 cc per IM injection site.
7. Avoid Extra Label Drug Use (ELDU) of antibiotics.
 - a. Use label dose and route of administration.
8. Avoid using multiple antibiotics at the same time.
9. Don't mix antibiotics in the same syringe, especially if given IM or Sub-Q.
10. Check ALL medication/treatment records before marketing:
 - a. Don't market cattle with less than 60 WD without examining the treatment history.
 - b. Extend the WD time if the route or location of administration is altered.
 - i. Example; the WD for ear route of administration ceftiofur will be over 120 days if given SQ in the neck.
 - ii. Example; tissue irritation will cause the WD for Banamine to be over 30 days if given IM or Sub-Q instead of IV.
 - c. Extend the withdrawal time for multiple medications given by summing their label recommended WD.
 - i. Example; if the 1st medication has a 10 day WD and the 2nd medication has a 28 day WD, assign a 38 day WD.
 - ii. Example; if 1st medication has a 10 day WD and is repeated in three days, assign a 20 day WD.
 - d. Extend the WD for all penicillin given at doses which exceed the label dose
 - i. Example; the WD for Procaine Pen G given at 3 CC per CWT IM or Sub-Q is over 30 days
 - ii. Example; the WD for Procaine Pen G given at 4 CC per CWT IM or Sub-Q is over 30 days
 - iii. Example; the WD for Long Acting Pen G given at 3 CC per CWT IM or Sub-Q is over 120 days
 - iv. Example; the WD for Long Acting Pen G given at 4 CC per CWT IM or Sub-Q is over 180 days
 1. Testing urine test may not detect injection site residues and will test positive by the USDA-FSIS.
 - e. Never inject gentamicin or neomycin. The estimated WD is over 24 months
 - i. Testing urine test may not detect a kidney that will test positive by the USDA-FSIS.
 - f. Don't market cattle that have relapsed without examining the treatment history.
 - g. Don't market cattle with suspected liver or kidney damage without examining the treatment history.
 - h. Don't market cattle with antibiotic injection site knots without examining the treatment history.
 - i. Screen the urine for antibiotics of all cattle identified in steps a-d above. It is best to use broad spectrum microbial inhibition test such as the Pre-Harvest Antibiotic Screening Test (PHAST), a microbial growth inhibition test which uses *B. megaterium* as the test organism. Test sensitivity relative to FDA-CVM violative residue tolerances (Maximum Residue Limit or MRL)

BQA: All injections should be given in front of the shoulder slope and if possible avoid products that require IM use

Intramuscular (IM) injections not only increase soreness compared to subcutaneous (SQ) injections. Many of the products given IM cause significant muscle damage which subsequently caused a significant amount of expensive carcass trim. Knot or blemishes from SQ injections are much easier to find, examine and remove at the packers. Because of these, the National Cattlemen's Beef Association's (NCBA) National Beef Quality Assurance (BQA) program adopted a policy that ALL injections (antibiotics, vaccines, parasiticides, vitamins, prostaglandins, hormones, and all other injectables) be given in front of the slope of the shoulder, that products with SQ labeling be selected in preference to products labeled for IM use only, and that IM injections if required, be limited to not more than 10 cc. These injection site guidelines have been adopted by all state BQA programs. Almost all of our pharmaceutical and biologic product suppliers and government agencies responsible for those product approvals have worked diligently to design and label products to meet the national BQA program injection guidelines. Every antibiotic developed and approved by the FDA-CVM for our use in the last two decades has included use approval other than for IM, including the development of injectables that may be given in the SQ space of the ear and around the head. It is important to remember the safety of the operator, other bystanders, the animal or the food supply must never be jeopardized.

Change the injection needle between every 15 animals or if it becomes contaminated, or damaged. **Never, never, never** straighten a bent needle and use it again. Animals that have an injection needle broken off in them **CAN NOT** be marketed.

Introduction to the PHAST (Pre-Harvest Antibiotic Screening Test)

The PHAST is a microbial inhibition test (substances in the urine that inhibit the growth of the test microbe, *Bacillus megaterium* for the PHAST/FAST). *Bacillus megaterium* (ATCC 9885) is classified by the USDA among bacteria that are generally accepted as safe (GAAS). The organism will not cause disease in humans or domestic animals.

Microbial inhibition tests are indirect assays that are dependent on a residue being passed in the urine in a chemical form that inhibit the growth of the test organism.

Because *Bacillus megaterium* is frequently more sensitive to target antibiotics than the FDA established tolerance for the target antibiotic and because there are a number of microbial inhibition substances that are not antibiotics, false positives are the most common problem with these types of tests. False negatives are thought to be rare, but are dependent on the sensitivity of the test organism to the antibiotic relative to the FDA tolerance to the target antibiotic. *Bacillus megaterium* is very sensitive to penicillin type antibiotics and intermediate to aminoglycosides and sulfa drugs. The reliability of the PHAST for detecting violative residues in cattle has not been investigated. The most common false positives should be associated with antibiotics, such as Oxytetracycline and Naxcel, which has an established FDA tolerance level above the level detectable in the kidney or cleared in the urine. Specific *Bacillus megaterium* sensitivities to commonly used antimicrobials and their relationship to FDA tolerance are listed in the USDA-FSIS Bioassay Residue Screening Test Evaluation table located at the end of this paper.

THE PHAST IS NOT A RELIABLE TEST TO EVALUATE THE RESIDUE STATUS OF AN ANIMAL WHICH HAS NOT MET THE WITHDRAWAL TIME SPECIFIED ON AN ANTIBIOTIC LABEL. Never use the PHAST test to evaluate the residue status of an animal, which has not met the withdrawal time specified on the label of an antibiotic.

The PHAST is useful in evaluating cattle that have: undergone prolonged treatment, been treated with multiple antibiotics, and/or have failed to perform normally following therapy or have suspected organ (kidney or liver) damage that might interfere with excretion and elimination of an antibiotic.

Avoiding violative residues is dependent on: 1) using FDA approved medications, 2) following label directions when possible, 3) ELDU must have withdrawal times appropriate for the dose, medication and route of administration, 4) not exceeding dose per injection site recommendations, and 5) screening cattle which may not have cleared the antibiotics normally.

PHAST TEST OUTLINE: A Muller-Hinton agar plate is streaked to carpet with *B. megaterium* spores. A sterile swab dipped in urine is placed on the inoculated agar plate along with a neomycin antibiotic sensitivity disc as a positive control. Incubate the test plate containing the test urine swab agar side down at 37° C for 12-24 hours. The zone of inhibition for the positive control antibiotic sensitivity disc must be within the limits set for the disc used. If there is any inhibition of bacterial growth around the urine swab the is considered positive for urine antibiotic residues and the animal should be withheld from marketing

(See PHAST Sensitivity Table)

Note: From the USDA-FSIS Domestic Residue Plan "Blue Book" page 10. "beta-lactams (quantitated as penicillin-G; penicillins and cephalosporins are not differentiated within this category). Therefore ceftiofur will be false positive and not differentiated from penicillin. (last publication released 2005)

http://www.fsis.usda.gov/PDF/2005_Blue_Book_Vet_Drugs_%20Dom_Tables_1_thru_6B.pdf



University of Nebraska, Great Plains Veterinary Educational Center

Generic Name	Trade Name	FDA NADA	Tolerance ^c	STOP ^{ae} Detect	FAST ^{be} Detect	<i>B. sterno</i> thermophilus ^g
Ampicillin / Amoxicillin	Polyflex / Amoxi-Inject	055-030 / 055-089	0.1ppm edible	>0.1 ^f	0.2 ^d	0.005 to 0.06
Ceftiofur	Naxcel/Excenel/Excede	140-338 / 140-890	0.4 ppm kidney, 1.0 ppm muscle	>0.1 ^f	~ 0.1 ^f	0.1
Danofloxacin	A180	141-207	4 ppm liver,	>0.1 ^f	>0.1 ^f	0.6?
Enrofloxacin	Baytril	141-068	0.3ppm muscle,	>0.1 ^f	0.1 to 1 ^f	0.6
Erythromycin	Gallimycin	012-123	0.1ppm edible	>0.4 ^d	>0.05 ^d	0.1
Florfenicol	Nuflor	141-063	12ppm kidney, 3.7 ppm liver	>1 ^f	1 to 10 ^f	0.1
Gentamicin	Garasol	101-862	No tolerance-cattle,	>1 ^f	0.13 ^d	0.1 to 0.4
Lincomycin	Lincocin	200-189	No tolerance-cattle,	>10 ^f	8 ^d	0.1
Neomycin	Biosol	200-113	7.2ppm kidney, 1.2ppm muscle	~10 ^f	0.06 ^d	0.3
Oxytetracycline (depo)	TNTC	097-452	12ppm kidney, 2ppm muscle	>10 ^f	0.8 ^d	0.05 to 0.3
Pen G (300k = 200mg*180)	TNTC	065-505	0.05ppm edible	>0.1 ^f	<0.01 ^d	0.005 to 0.04
Spectinomycin	Adspec	141-077	4ppm kidney, 0.25ppm edible	>10 ^f	6.2 ^d	?
Sulfa-chlorpyridazine	Vetisulid-215	033-318	0.1ppm edible	>100 ^f	~10 ^f	0.1
Sulfa-diamethoxine	Albon40 / AlbonSR	041-245 / 093-107	0.1ppm edible	>100 ^f	~1 ^f	0.025 to 0.1
Sulfa-methazine	TNTC	140-270	0.1ppm edible	>100 ^f	???	0.1
Tilmicosin	Micotil	140-929	14.4ppm kidney, 1.2ppm liver cattle	>10 ^f	1 to 10 ^f	0.05 to 0.8
Tulathromycin	Draxxin	141-244	5.5 ppm liver (~=1.6 ppm kid?)	>0.1 ^f	>0.1 ^f	18
Tylosin	Tylan	012-965	0.2ppm kidney, & liver cattle	>1 ^f	1 to 10 ^f	0.05

a	<i>Bacillus subtilis</i> (ATCC: 6633) the test bacterium for the STOP antibiotic residue screening test
b	<i>Bacillus megaterium</i> (ATCC: 9885) the test bacterium for the FAST/CAST antibiotic residue screening test MedTox_Diagnostics, Inc, Burlington, NC http://www.medtox.com/
c	FDA published tolerance for levels found in listed eatable tissue/food ... http://www.cvm.gov ... FOI January 2000
d	Korsrud, G.O., Evaluation of the swab test on premises, the calf antibiotic & sulfa test, & a microbial inhibitor test with standard solution of 22 antibiotics. J. Food Protection. 51:1 43-46, 1988
e	Test antibiotic diluted to ppm (microgram/ML) listed.
f	FAST: Test conducted at NU-GPVEC, USDA-FSIS Approved Test Source: MedTox Diagnostics, Kit # 600181 Burlington, NC, 800-334-1116
g	<i>B. sterno</i> thermophilus var. <i>calidolactis</i> Sensitivity (PPM) used in the PREMI-TEST and CHARM COW SIDE Tests
h	CHARM CowSide: <i>Bacillus stearothermophilus</i> var. <i>calidolactis</i> Sensitivity (PPM)

USDA-FSIS Residue Testing Program Information: <http://www.fsis.usda.gov/OA/background/mircrotest.htm> ... <http://www.fsis.usda.gov/OA/background/residue.htm> ... <http://www.fsis.usda.gov/ophs/hrp2000/index.htm>

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