

Antibiotics in small animal medicine

Antimicrobial agents are classified functionally according to the manner in which they adversely affect a micro-organism. Some organisms develop an ability to resist the effects of an antimicrobial agent.

Resistance against certain drugs in cases of antimicrobial treatment occurs usually as a result of prolonged growth of an organism in sublethal concentrations and the survival of the organisms which have the least innate susceptibility to the agent.

Subtherapeutic dosage used in mass medication programs as preventives against unspecific infections carry the risk of creating resistant strains.

Therefore it is reasonable to culture and

identify the involved organisms and to perform a sensitivity test to determine the most appropriate antibacterial drug.

On top of that allows a distinct treatment as well in cases where the first drug of choice was not successful.

It is necessary to keep in mind clinical studies and experiences as well as results of pharmacological and toxicological characteristics.

Species, age, organ system and other features should be considered as well.

The following table shows recommended drugs, proprietary name, dosage and special characteristics and precautions. Ophthalmic drugs and drugs for topical otitis-treatments are included.

drugs (proprietary name)	therapeutic areas	dosage/ comment
<u>1. Penicillium group</u> <u>(Oligopeptides)</u>	local and systemic infection of skin or respiratory tract	not for use in 'exotic pets' <u>Cave:</u> allergic reactions with Penicillium
Penicillium (Penicillium G, Penicillium V)		10.000-20.000 I.E.(15-25mg)/kg s.c., i.m., i.v. 1-4 x daily., 8-10(-30)mg/kg p.o. tid
	Leptospira infection	25.000-40.000 I.E./kg bw i.m., i.v. bid like Streptomycin
Oxa- und Cloxacillin (Stapenor H.M.®)		11-55 mg/kg p.o. bid/tid
Ampicillin (Ampisan 20®, Lokalin 20®, Ampitab®)		10-25 (cat:-50)mg/kg p.o. tid 10-20 mg/kg s.c., i.m., i.v. tid birds: 50 mg/kg i.m. bid/tid 100mg/l water rodents: 25mg/kg i.m., s.c., 50-200mg/kg p.o. bid
Amoxicillin (Clamoxy®)		5-10mg/kg p.o. bid birds: 150mg/kg i.m., s.c., 150mg/kg p.o. 2x tgl., 200-400mg/l water 300-500mg/kg soft food rodents: 100-150mg/kg i.m., s.c. bid
Amoxicillin and Clavulanacid (Synulox®)		5-10mg/kg p.o. bid birds: 125mg/kg p.o. bid

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2. Cephalosporine	UTR and skin infections	Normally no cross reaction with Penicillium, in some cases of renal failure > nephrotoxicity
Cephaclor (Panoral®)		20mg/kg bid (max. 750mg) if necessary increase to tid
Cephalexin (Cobaxim®, Rilexine®)		20-30mg/kg p.o. bid birds: 35-50mg/kg tid. p.o. reptiles: 40-80mg/kg i.m. sid at 30°C rodents: 15-30mg/kg i.m. bid/tid
Cephoperazon (Peracef®, Cefobis®)		topic application, udder injectors, otitis

3. Tetracycline	locale and systemic infectionen, drug of choice for Ehrlichiosis, Haemobartonellosis, Borreliosis, infections with Chlamydia, Mykoplasma and Campylobacter	<u>Cave:</u> staining of teeth in juveniles
Tetracyclin (Tetracyclin, Terramycin®, Aureomycin®)		10-20mg/kg p. o., 1mg/kg i.v. bid (Chlamydia infektion in cats 7 mg/kg i.v, i.m.), rodents (excl.hamster/ guinea pig 15-30mg/kg p.o
Doxycyclin (Doxycyclin, Ronaxan®, Vibravenös®, Doxirobe Gel®)		5-10mg/kg/Tag, p.o. bid birds: 10mg/kg/Tag i.m., 10-25mg/kg p.o. bid 100mg/kg i.m. once a week, 500mg/l water no supplement of grit during treatment reptiles: 10 mg/kg i.m. sid

4. Aminoglycosides	local and systemic infections	Depending on dosage: ototoxicity nephrotoxicity, neuromuscular block
Gentamicin (Gentamicin, Gentovet®)		2-4mg/kg s.c., i.m., i.v. bid/tid alternative: 6mg/daily rodents 4-5mg/kg sid i.m. rabbit 2-4mg/kg s.c., i.m. bid/tid
Streptomycin (Streptomycin, combination with β- Lactam-Antibiotics Tardomyocel®)		10mg/kg i.m., s.c. 3x tgl. hamster, rodents: 25-50mg/kg sid i.m., s.c. reptiles: 10mg/kg i.m., s.c. every other day at 24°C
	inhibits Leptospira- shedding via urine	15mg/kg i.m., s.c. bid for 2 weeks
Neomycin (Neomycin®)	local application in case of dermal and ear infections or intestinal tract infections	10-30mg/kg p.o. bid reptiles: 5-50 mg/kg p.o. bid birds: 20mg/kg/sid p.o.
Kanamycin (Kanamycin®)	reserve antibiotic for urinary tract infections	5mg/kg s.c. bid

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5. Polypeptides	intestinal tract infections locale infections of eye and ear with Pseudomonas	systemic toxicity > only topic application (neurotoxicity, nephrotoxicity)
Polymixin B (Stoparin®, Surolan®)		2-3mg/kg p.o. bid/tid
PolymixinE /Colistin (Colistin®)		2-3mg/kg p.o. tid

6. Makrolides	infection of respiratory and urogenital system, bone marrow, and dermal infections, Mykoplasma infections	
Erythromycin (Erythromycin®, Erythrocin®)		10-20mg/kg s.c. bid 5-10mg/kg p.o. qid <u>Cave:</u> vomitus in dogs birds: 20mg/kg i.m., s.c., 125mg/ml water, 200mg/kg soft food
Tylosin (Tylosin®, Tylan®)		2-10mg/kg i.m./day, increase dosage in chronic colitis <u>Cave:</u> injection pain birds: 20-40mg/kg i.m.bid., 500mg/l water, aerosol 100mg soluble in 5ml DMSO u. 10ml NaCl-solution reptiles 25mg/kg i.m./sid at 30°C rodents 10mg/kg bid i.m., s.c.

7. Lincosamide	infection of skin and bones, arthritis	
Lincomycin (Albionic®)		10mg/kg i.m., 20mg/kg p.o. bid <u>Cave:</u> Colitis in hamsters/rabbits
Clindamycin (Antirobe®, Sobelin®)	wound cavites- and dental infektion,	5-10mg/kg p.o. bid osteomyelitis 11mg/kg exp.rabbits dental infections 7.5 mg/kg
	Toxoplasmosis	5-10mg/kg p.o. tid/qid

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8. Gyrase inhibitors	infection of respiratory and urogenital system, bone and joint, Chlamydia infections.	<u>Cave:</u> cartilage damage in juveniles
Enrofloxacin (Baytril®)		5mg/kg/Tag, p.o., s.c. in Pseudomonas infections 5mg/kg bid birds: 10-20mg/kg im, p.o. sid/bid
Marbofloxacin (Marbocyl®)		2mg/kg i.v., s.c., p.o./sid birds: 10mg/kg p.o./sid

9. micelaneous		
Chloramphenicol (Chloramphenicol, Chloromycetin®, Chlorasel®, Ibemycin®)	infections with Chlamydia, Mykoplasma, Rickettsia and Bacteroides, meningo-encephalitis	30mg/kg i.m., p.o., s.c. bid mouse: 50mg/kg i.m. bid 200mg/kg p.o. bid rodents: 15-50mg/kg i.m., p.o. bid
Sulfonamid u. Trimethoprim (Trimethoprim-Sulfonamid®, Eusaprim®, Bactrim®, Borgal®, Tribriksen®)	infections with Chlamydia, Coccidia and Toxoplasma	15-20(30) mg/kg/sid for both substances, different applications depending on preparation meningitis: 15mg/kg s.c., p.o. tid mastitis: 30mg/kg p.o. bid birds: 8mg/kg i.m., s.c. bid., 20mg/kg p.o. bid reptiles: 15-30mg/kg i.m./sid at 24°C rodents: 50-120mg/kg i.m., s.c./sid 100mg/kg p.o./sid
Nitrofurantoin (combined preparations: Urofur®, Urospasmon®, Uroclear®)	urinary tract infections	4mg/kg p.o. bid (related to Nitrofurantoin), prophylactic in cases of recurrent urinary tract infections :3-4 mg/kg/sid after last urination in the evening