

Appendix

Compendium of Drugs and Compounds Used in Amphibians¹

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Antibacterial Compounds

Amikacin	5 mg/kg q 48 hr IM for 5-14 tx	Maruska 1994
Carbenicillin	200 mg/kg SQ, IM, or IC q 24 hr	Crawshaw 1992
Ceftazadime	20 mg/kg IM q 48-72 hr	Wright and Whitaker 2001
Chloramphenicol	50 mg/kg SQ, IM or IC q 24 hr; 20 mg/L bath; 10 mg/mL in 0.5% saline as 24-hr bath	Crawshaw 1992; Crawshaw 1992; Menard 1984
Ciprofloxacin	10 mg/kg PO q 24-48 hr for 7 tx; 25-37.5 mg/gal for 6-8 hr bath q 24 hr for 7 days	Wright and Whitaker 2001
Doxycycline	10-50 mg/kg PO q 24 hr	Wright and Whitaker 2001
Enrofloxacin	5-10 mg/kg IM q 24 hr for minimum 7 tx	Wright and Whitaker 2001
Fluconazole	60 mg/kg PO q 24 hr for 7 days	Wright and Whitaker 2001
Gentamicin	2.5 mg/kg IM q 72 hr (cold temp. of 3°C); 3 mg/kg IM q 24 hr (warm temp. of 2°C); 13 mg/kg q 48 hr (axolotel); 8 µg/mL in 0.5% saline as 24-hr bath for 5 days	Wright and Whitaker 2001; Wright and Whitaker 2001; Maruska 1994; Menard 1984
Isoniazid	12.5 mg/L as a 24-hr bath	Fox 1980
Metronidazole	50 mg/kg PO q 24 hr for 3 days, 50 mg/L bath for up to 24 hr	Wright and Whitaker 2001
Nalidixic acid	10 mg/L bath; 10 µg/ml in 0.5% saline bath for 24 hr	Crawshaw 1992; Menard 1984
Nitrofurantoin	50 µg/ml in 0.5% saline bath for 24 hr	Menard 1984
Nitrofurazone	10-20 mg/L bath for 24 hr; 100 mg/L bath for up to 48 hr	Crawshaw 1992; Maruska 1994
Oxytetracycline	1 g/kg diet for 7 days; 100 mg/L bath for 1 hr; 125 mg/L bath for 12-24 hr for up to 3 days	Crawshaw 1992; Wright 1996; Maruska 1994
Penicillin	25,000 iu (adult axolotl)	Maruska 1994
Piperacillin	100 mg/kg IM or SQ q 24 hr	Wright 1996
Rifampin	25 mg/L bath for 24 hr	Fox 1980
Sulfadiazine	132 mg/kg q 24 hr	Raphael 1993
Sulfamethazine	1 g/L bath q 34 hr	Crawshaw 1992
Tetracycline	50 mg/kg PO q 12 hr; 10 µg/ml in 0.5% saline bath for 24 hr	Raphael 1993; Menard 1984
Trimethoprim/ sulfamethoxazole	15 mg/kg PO q 24 hr up to 21 days; 20 µg/mL in 0.5% saline bath for 24 hr; 80 µg/mL in 0.5% saline bath for 24 hr	Wright and Whitaker 2001; Menard 1984; Menard 1984
Trimethoprim/ sulfadiazine	15-20 mg/kg IM q 48 hr for 5-7 tx	Maruska 1994
Trimethoprim/sulfa	3 mg/kg SQ or PO q 24 hr	Crawshaw 1992

¹IC, intracoelomic; IM, intramuscular; PO, per os; SQ, subcutaneous; tx, treatment.

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Antifungal Compounds

Acriflavin	500 mg/L for 30 min bath q 24 hr	Wright and Whitaker 2001
Acriflavin/methylene blue	0.5 mL of a 0.45% acriflavin/0.00075% methylene blue stock added to 1 L Holtfreter's solution as a 24-hr bath for 3-5 days	Maruska 1994; Wright and Whitaker 2001
Amphotericin B1	1 mg/kg IC q 24 hr for 14-28 tx	Wright and Whitaker 2001
Benzalkonium chloride	2 mg/L as a 60-min bath q 24 hr; 0.25 mg/L, bath for 72 hr; 0.25 ppm as a continuous bath	Raphael 1993; Crawshaw 1992; Wright and Whitaker 2001; Raphael 1993
Chlorinated water	up to 5 ppm bath for maximum of 2 hr/day	Wright and Whitaker 2001
Copper sulfate	500 mg/L for 2 min q 24 hr for 5 days, then q 7 days until no longer needed	Wright and Whitaker 2001
Itraconazole	2-10 mg/kg PO q 24 hr for 14-28 days, 0.01% liquid form in 0.6% saline as a 5-min bath for 11 days	Nichols and Lamirande 2000
Ketoconazole	10 mg/kg PO q 24 hr; 10-20 mg/kg PO q 24 hr for 14-28 days	Crawshaw 1992; Wright 1996
Methylene blue	50 mg/mL as a 10 second dip, 2-4 mg/L as a continuous bath for up to 5 days	Wright 1996; Crawshaw 1992; Raphael 1993; Wright 1996
Miconazole	5 mg/kg IC q 24 hr for 14-28 days	Wright 1996
Potassium permanganate	200 mg/L bath q 24 hr for 5 min; 1 g/100 ml as topical tx q 48-72 hr	Raphael 1993; Maruska 1994
Sodium chloride	4-6 g/L bath for 72 hr; 10-25 g/L bath for 5-30 min; 20 mg/L bath for 6-8 hr	Crawshaw 1992; Wright 1996; Wright and Whitaker 2001

Antiparasitic Compounds—Protozoa

Acriflavin	0.025% bath for 24 hr for 5 days	Raphael 1993
Copper sulfate	500 mg/L dip for 2 min q 24 hr; 0.0001 mg/L bath to effect	Raphael 1993; Crawshaw 1992; Wright 1996
Distilled water	2- to 3-hr bath	Raphael 1993
Formalin	1.5 ml/L of a 10% formalin solution dip for 10 min q 48 hr	Crawshaw 1992
Methylene blue	2 mg/L as a continuous bath	Raphael 1993
Metronidazole	10 mg/kg PO once; 10 mg/kg PO q 24 hr for 5-10 days; 50 mg/kg PO q 24 hr for 3-5 days; 100-150 mg/kg PO q 14-21 days; 50 mg/L bath for up to 24 hr	Maruska 1994; Poynton and Wright 1994; Wright 1996
Paramomycin	50-75 mg/kg PO q 24 hr (for amoebiasis)	Wright 1996
Potassium permanganate	7 mg/L bath for 5 min q 24 hr	Raphael 1993
Quinine sulfate	30 mg/L bath for up to 1 hr (for hemoprotozoans)	Wright 1996
Sodium chloride	4-6 g/L bath for 24-72 hr; 6 g/L bath for 3-5 days; 10-25 mg/L bath for 5-30 min	Crawshaw 1992; Raphael 1993
Sulfadiazine	132 mg/kg q 24 hr (for coccidiosis)	Wright and Whitaker 2001
Sulfamethazine	1 g/L bath (for coccidiosis)	Wright and Whitaker 2001

Antiparasitic Compounds—Helminths

Fenbendazole	10 mg/kg PO once; 50 mg/kg PO SID for 3-5 days; 100 mg/kg PO q 10 days, 100 mg/kg PO q 10-14 days, 100 mg/kg PO q 14-21 days	Maruska 1994; Wright and Whitaker 2001; Poynton and Whitaker 1994; Maruska 1994; Wright 1996
Ivermectin	2 mg/kg topically, then rinse off after a few minutes; 0.2-0.4 mg/kg PO once; 0.2-0.4 mg/kg PO or IM q 14 days	Letcher and Glade 1992; Wright 1996
Levamisole	8-10 mg/kg IC or topically q 14-21 days; 10 mg/kg IM q 14 days; 50-100 mg/L bath for 1-8 hr q 7 days; 100-300 mg/L bath for 24 hr q 7-4 days for a minimum of 3 tx; 100-300 mg/L bath for 72 hr q 14-21 days for a minimum of 3 tx	Wright 1996; Raphael 1993; Wright and Whitaker 2001; Wright and Whitaker 2001; Wright and Whitaker 2001
Mebendazole	20 mg/kg PO q 14 days	Raphael 1993
Praziquantel	10 mg/L bath up to 3 hr q 7-21 days; 8-24 mg/kg PO, SQ, IC, or topically q 7-21 days	Wright 1996
Thiabendazole	50-100 mg/kg PO q 14 days	Cosgrove and Jared 1977

Compounds for Anesthesia, Analgesia, and Euthanasia

Benzocaine	50 mg/L (larvae); 200-300 mg/L (adult), buffered with sodium bicarbonate to adjust pH to around 7.0-7.4 (sedation, anesthesia)	Crawshaw 1993
Buprenorphine	75 mg/kg SQ (for analgesia)	Machin 2001
Dexmedetomidine	40 mg/kg SQ (for 4+ hr analgesia); 120 mg/kg SQ (for >8 hr analgesia)	Machin 2001
Fentanyl	1.0 mg/kg SQ (for analgesia)	Macin 2001
Flunixin meglumine	1 mg/kg IM or SQ q 24 hr (for analgesia)	Wright and Whitaker 2001
Isoflurane	3-5% induction, 1-2% maintenance (terrestrial species); 3 mL/L: bubbled into water to effect for aquatic species (sedation, anesthesia)	Stetter 2001; Carpenter 2005
Ketamine	50-150 mg/kg IM or SQ (anesthesia)	Crawshaw 1993
Ketamine/Diazepam	20-40 mg/kg ketamine/0.2-0.4 mg/kg diazepam IM (sedation, anesthesia)	Schumacher 1996
Meperidine	100 mg/kg SQ (for analgesia)	Machin 2001
Morphine	38 mg/kg SQ once (for analgesia); 30-100 mg/kg SQ, IM or topical (for analgesia)	Wright and Whitaker 2001; Machin 2001
Propofol	10 mg/kg SQ (for sedation)	Lafortune et al. 2001
Sodium pentobarbital	60 mg/kg IC; 60 mg/kg IV (euthanasia)	Burns and McMahan 1995, Carpenter 2005
Tricaine methanesulfonate (MS-222)	200-500+ mg/L bath, buffered with and equal amount of sodium bicarbonate to adjust pH to ~7.0-7.4 (sedation, anesthesia); 10 mg/L bath for minimum of 30 min followed by cervical separation (euthanasia)	Fowler 1986; Hadfield and Whitaker 2005

Vitamins

Vitamin B-1 (thiamine)	25 mg/kg PO prn; 50-100 mg/kg IM or IC prn	Hadfield and Whitaker 2005; Wright and Whitaker 2001
Vitamin B complex	0.5-1.0 mL/gal water bath	Wright and Whitaker 2001
Vitamin D ₃	2-3 iu/mL continuous bath; 100-400 iu/kg PO q 24 hr; 1000 iu/kg IM once 24 hr after resolution of tetany following Ca tx	Wright and Whitaker 2001
Vitamin E	1 mg/kg IM or PO q 7 day	Wright and Whitaker 2001

Hormones

Gonadotropin-releasing hormone	0.1 mg/kg SC, IM, repeat prn (induction of ovulation)	Raphael 1993
Human chorionic gonadotropin	250-400 IU SC, IM (induction of ovulation); 50-100 IU SC, IM (sperm release); 300 IU SC, IM (sperm release)	Crawshaw 1993; Crawshaw 1993; Raphael 1993
Pregnant mare's serum gonadotropin	50 IU SC, IM (induction of ovulation)	Crawshaw 1993
Progesterone	1-5 mg SC, IM (induction of ovulation)	Crawshaw 1993

Miscellaneous Compounds for Use in Amphibians

Allopurinol	10 mg/kg PO q 24 hr (for gout)	Wright and Whitaker 2001
Atropine	0.1 mg/kg SQ or IM prn (for organophosphate toxicosis)	Wright and Whitaker 2001
Calcitonin	50 iu/kg q 7 days (possibly for metabolic bone disease)	Wright and Whitaker 2001
Calcium gluconate	1 mg/kg PO q 24 hr (for metabolic bone disease)	Wright and Whitaker 2001
Calcium gluconate, 10%	100 mg/kg IM, IV, or IC (for hypocalcemic tetany)	Wright and Whitaker 2001
Dexamethasone	1 mg/kg IM or IV (for shock)	Wright and Whitaker 2001
Doxapram	2 drops/100 g (for respiratory problem)	Wright and Whitaker 2001
Epinephrine 1:1000	1 drop/100 g (for respiratory problems and cardiac arrest)	Wright and Whitaker 2001
Prenisolone sodium succinate	5-10 mg/kg IM (for shock)	Wright and Whitaker 2001

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