Medications Used in Avian and Exotic Medicine & Pharmaceutical Terms

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Pharmaceutical Terms Commonly Used

Medications Used in Avian and Exotic Medicine

Acetylsalicylic Acid (Aspirin): potent anti-inflammatory, useful for musculoskeletal pain, also will bring fever down.

Acyclovir (Zorirax): used to treat certain Herpes virus infections; it interferes with the synthesis of the virus’ DNA. It can be applied topically in ointment form, orally or intravenously; can be nephrotoxic (kidney damage), so hydration must be maintained.

Allopurinol (Zyloprim): used to treat gout; its action inhibits uric acid production; given orally, usually in drinking water; antiviral; potentially nephrotoxic; treats hyperuricaemia, which causes gout; not enough testing done in birds to note all side effects.

Amikacin (Amikin): an aminoglycoside (as is Gentamicin); a potent antibiotic that must be given by injection as it is not absorbed orally; can cause deafness and/or kidney damage, so fluids should be administered during injections to prevent kidney damage: may also be used in nebulization therapy.

Ammonium solution (Penetran): ointment; analgesic, antipruritic, anti-inflammatory; reduces swelling and relaxes muscles; can be used on fresh wounds; avoid overuse.

Amphotericin-B (Fungizone): a newer, antifungal antibiotic used to treat fungal infections that do not respond to other antifungal drugs, esp. Aspergillus; Lotion, cream, ointment, intravenously, injected directly into trachea, or delivered to the respiratory tract via nebulization; may cause bone marrow and kidney toxicity; the most commonly used drug in
veterinary medicine for systemic fungal infections. In avian medicine, *Aspergillus* infections are commonly diagnosed and amphotericin B is widely used to treat such cases; typically administered to birds intravenously or intratracheally (IT) or via nebulization; despite its potential for toxic effects, continues to be one of the first drugs selected in both human and veterinary medicine to treat systemic fungal infections.

**Amoxicillin (Amoxil and Clavulanate):** a combination of drugs that makes amoxicillin more effective in treating some bacterial infections; used to prevent pasteurellosis from animal bites.

**Amprol (Amprolium, Corid):** used in combination with other drugs for Coccidia; put in drinking water; birds may not drink medicated water.

**Aralen Phosphate (Chloroquine):** for malaria, acts to destroy Plasmodium in the red blood cells, given orally.

**Azithromycin (Zithromax):** an antibiotic new to avian medicine; effective against a variety of Gram-positive and Gram-negative bacterial pathogens and has some activity against anaerobic bacteria and protozoa; more testing needs to be done to determine effectiveness in psittacines.

**Butorphanol (Stadol):** a pain medication and cough suppressant; a powerful synthetic opioid; presently it is the mostly commonly used analgesic drug in the management of acute pain in avian and exotic mammal medicine; used in perioperative and postoperative pain management; is the current recommendation for opioid analgesia in parrots.

**Calphosan:** injectable form of calcium used to treat convulsions due to low serum calcium level; also dietary supplement during egg-laying, egg-binding and laying of soft-shelled eggs; periods of rapid growth or bone healing.

**Calcitonin (Miacalcin, Fortical):** a hormone used to treat metabolic bone disease; treats hypercalcemia secondary to neoplasia and poison toxicity.

**Calcium EDTA:** preferred initial drug to chelate lead or zinc-related toxicosis; given by injection; caution in patients with renal or hepatic impairment.

**Capricillic Acid:** positive results seen when administered with anti-fungals for aspergillosis in parrots; contains calcium, magnesium and zinc caprylates; given orally.

**Carnidazole:** trichomoniasis, hexamitiasis, histomoniasis; cockatiels with Giaria.

**Carprofen:** oral or injectable pain reliever; Carprofen remains a popular NSAID in avian and exotic medicine; NSAIDs are the first course of therapy for chronic disorders. Carprofen is the current drug of choice because of its widespread use and low incidence of reported toxicities.

**Cefotaxime (Claforan):** in the group of cephalosporins, an injectable antibiotic that crosses the blood-brain barrier; can be used to treat susceptible bacterial infections in the brain; useful for serious susceptible bacterial infections elsewhere in the body; excreted by kidneys; reduce dose with renal impairment; good for Staph, Strep and some Gram-negative bacteria; may cause diarrhea, secondary candidiasis.
**Celecoxib (Celebrex):** pain reliever, a COX-2 enzyme inhibitor, NSAID (non-steroidal anti-inflammatory), used to control signs of Proventricular Dilatation Disease (PDD); is not a cure; used for general pain relief, arthritis, anti-inflammatory

**Cephalexin (Keflex):** also a cephalosporin; can be given orally to treat susceptible bacterial infections; may be good for deep skin infections; varied efficacy for many Gram-negative bacteria

**Chelating agent:** used to bind toxic elements (lead, zinc, iron) and remove them from the body safely; *chelating agents* are effective against zinc, (a metal that can cause weakness, depression, vomiting, diarrhea, polydypsia, polyuria); found in galvanized metal, some adhesives, some toys, pennies minted after 1982, and more; is associated with feather-picking in some birds, especially cockatoos

**Chlortetracycline:** an older member of the tetracycline family, formerly used to treat psittacosis (Chlamydophila); treat concurrently for yeast infections; oral preparation; however, Doxycycline is preferred

**Chorionic Gonadotropin (Pregnyl):** a hormone used to inhibit egg laying; also used to treat feather-picking due to sexually related disorders

**Ciprofloxacin (Baytril):** broad-spectrum antibiotic, made for human use, often used in avian medicine, was in the news during anthrax scare because it is a first-choice antibiotic for treating it; is a fluoroquinolone, in the same family of antibiotics as Enrofloxacin; most anaerobes (Pseudomonas and Streptococcus) are resistant and may overgrow; Chlamydia and mycoplasma only moderately susceptible

**Cisapride (Propulsid):** an oral medication to stimulate gastrointestinal motility, increases gastric emptying rate

**Clotrimazole (Lotrimin):** an antifungal used as an adjunct to aspergillosis treatment; can be administered into air sacs, into the trachea, topically or by nebulization; patient must be stable and out of respiratory distress

**Corticosteroids:** Hydrocortisone, Prednisolone, Methylprednisolone, Desamethasone; used to treat hypovolemic and septic shock, acute trauma and toxicities

**Cortisone (Cortone),** a corticosteroid that should be used with extreme caution in avian patients due to immunosuppressive properties

**Clopidol (Coyden):** used to treat Coccidia

**D-Ca-Phos:** balanced Vit. D3-calcium-phosphorus nutritional supplement

**Dexamethasone (Decadron):** a potent steroid, anti-inflammatory; used for shock and trauma; may predispose a bird to aspergillosis and other fungal infections; a synthetic steroid; used in treatment of inflammatory conditions and hormonal imbalances; use with caution—egg-related peritonitis

**Dextrose:** for seizing birds caused by hypoglycemia; measure blood glucose level prior to use
**Diatrozoate sodium**: for goiter in budgies

**Diazepam (Valium)**: used for sedation, seizures, convulsions; acts to relax skeletal muscle, IV, intramuscularly, oral or injectable; can be used with anesthetic agents; may cause hypotension; may increase intracranial and intraocular pressure; caution in renal and liver impairment

**Digoxin solution (Lanoxin)**: for congestive heart failure in conures and parakeets; lower dose in patients with impaired renal function

**Dimercaprol (BAL)**: chelator for arsenic and gold, mercury if ingested; helps in lead excretion

**Dimercaptoproic acid (DMSA)**: oral chelator for removing toxins from kidney and blood, nasty smell and taste. Preferred oral chelator for lead and zinc toxicosis

**Dimethyl sulfoxide (DMSO) (Rimso-50)**: topical, for edema, pain, swelling; causes vasodilation and histamine release

**Dimetridazole (Emtryl)**: used in drinking water to treat giardiasis and trichomoniasis; not to be used when birds are breeding as males feeding hens in nest may consume enough to reach toxic levels; prolonged use may result in toxicity or development of candidiasis; extremely hepatotoxic; can cause death

**Diphenhydramine (Benadryl)**: antihistamine, used for allergic feather picking, pruritis and allergy signs; given orally; calming effect in some anxious birds; may cause hypotension

**Doxycycline (Atridox)**: a very effective drug for treating psittacosis (Chlamyphila); bacteriostatic and anti-inflammatory; can be given orally in water; is also available as an injectable preparation that will provide blood levels for one week with one injection; also used to treat susceptible bacterial infections and mycoplasmosis, allergy, skin irritation; general antibiotic for many issues

**Enrofloxacin (Baytril)**: broad-spectrum antibiotic, useful for a wide variety of infections such as chlamydiosis; injectable, orally and in tablets; multiple injections should not be given—they can cause serious tissue, pain and nerve damage; it is bactericidal and has excellent activity against both Gram-positive and Gram-negative pathogens; this antibiotic has also been used to control certain intracellular pathogens; not well accepted by birds when put in drinking water; more research is needed for its usefulness in birds

**Ether**: an inhalant anesthetic agent no longer used due to inflammatory and explosive qualities at concentrations needed to induce anesthesia

**Fenbendazole**: a new anthelminthic; indicated for the removal of a wide variety of parasites; not enough testing has been done on birds; not recommended at this time; toxic in some species, esp. cockatiels

**Ferric Subsulfate**: a coagulant to stop bleeding; available in liquid and powder form; limited to hemorrhage of beak and nails, as it will cause tissue necrosis

**Florfenicol (like chloramphenicol)**: is a broad-spectrum, bacteriostatic antibiotic that is
effective against many Gram-positive and Gram-negative organisms; needs more research for use in exotic species

**Fluconazole (Diflucan):** antifungal medication (fungistatic); useful for treating Candida yeast infections; may cause regurgitation; (can be combined with another treatment for yeast—Nystatin); also used to treat Cryptococcus.

**Flucytosine (Ancobon):** an antifungal (fungistatic); can be used prophylactically in raptors and waterfowl to prevent aspergillosis; may be used as adjuvant for aspergillus treatment; its action is to inhibit certain biochemical reactions necessary to the life of the fungus cell, thereby killing it. It can be toxic to the bone marrow, administered orally.

**Fluoxetine (Prozac):** used as adjunctive treatment for depression-induced feather-picking, antidepressant

**Fluoroquinolones:** anti-microbial drugs that inhibit bacterial gyrase (the enzyme able for coiling DNA); may induce GI signs and seizures

**Furosemide (Lasix):** a diuretic, helps remove excess water from tissues, causes increased urination; can be used in treatment of heart failure, fluid build-up in tissues or celoem

**Gentamicin (Gentak ointment) (Genoptic drops) (Gentamicin Sulfate Cream):** an aminoglycosid; can cause deafness and kidney disease, not absorbed orally; used in some eye preparations; can be nebulized or given by injection, not recommended for injectable use as safer, newer aminoglycosides are available; mostly used for cockatiels; treats dermatitis; available as drops for nares, eyes and as an antibiotic cream and ointment for sores and lesions

**Glipizide (Glucotrol):** an oral agent that can be used in the management of diabetes mellitus

**Haloperidol (Haldol):** an oral medication used for behavioral disorders and for frustration-induced feather picking; used with hormone injection; for obsessive/compulsive behavior; commonly fails; may work for short time because it increases prolactin levels; may cause hypotension and anorexia

**Halothane (Fluothane):** an older inhalation anesthetic agent, not usually used in avian patients; it gives moderately good muscle relaxation but has the potential for kidney and liver damage

**Heparin:** treats sores; shown to have anti-inflammatory properties

**Hyaluronidase (Amphadase):** added to sterile fluids for injection, causes increased rate of absorption of fluids (such as Lactated Ringers solution) when administered subcutaneously; in some cases, replacing the need for intravenous or intraosseous fluids

**Hydrocortisone:** a steroid that should be used with extreme caution in avian patients due to immunosuppression in some topical agents

**Hydromorphone (Dilaudid):** a newer opioid agonist that is related to morphine and is used for sedation, analgesia, and as a restraining agent. Hydromorphone is 5 times as
potent as morphine; more effective at relieving continuous, dull pain versus sharp, intermittent pain; can be used in nebulization to help with dyspnea because of its respiratory depressive effects; can have deleterious effects on the intestinal system, slowing down gut motility and causing constipation and ileus; may not be the best choice for managing analgesia in avian patients until further research is performed

**Hydroxyzine (Vistaril):** mixed in water; lowers the threshold for seizures, hypotensive, anti-anxiety, anti-pruritic and antihistamine action; not to be used with CNS depressants

**Injacom:** injectable preparation of vitamins A, D3 and E used to treat Vit. A deficiency and to promote bone healing and in the treatment of egg binding, soft-shelled eggs, and soft bones.

**Insulin:** injectable hormone for lowering blood glucose levels in diabetes mellitus; appears to have very short duration of activity in avian patients

**131 Iodine (Iodotope therapeutic):** radioactive form of iodine, used to treat hyperthyroidism and in the diagnosis of thyroid disorders; administered orally

**Ipronidazole (Ipropran):** used to treat giardiasis and trichomoniasis, put in drinking water

**Isoflurane (Aerrane):** an inhalation anesthetic agent that is very safe for use in avian patients, rapidly becoming the anesthetic of choice for avian anesthetic procedures due to its safety, effectiveness and rapid recovery period

**Isoniazid (Nydradiz):** treats avian tuberculosis; bacteriostatic for bacilli that are not growing, and bacteriocidal for bacilli that are dividing rapidly; given orally

**Itraconazole (Sporanox):** an oral antifungal agent used in the treatment of aspergillosis, candida, Cryptococcus in psittacines; may cause hepatitis, bone toxicit, hypokalemia (a lack of potassium in the blood, usually caused by excessive amounts of it being excreted, that leads to muscle weakness, heart irregularities, disorientation, and sometimes cardiac arrest)

**Ivomectin (Ivermectin) (Stromectol):** an antiparasitic drug; can be given orally, injected or applied topically; effective for scaly mites, lice (ectoparasites), may not be as effective in eradicating ascarids, other nematodes; reported toxicity in finches

**Ketamine (Vetalar):** injectable dissociative agent, may be combined with other injectable medications to provide anesthesia; non-barbituate anesthetic that produces immobility without analgesia; given intramuscularly or intravenously

**Ketoconazole (Nizoral):** for systemic fungal infection, including aspergillosis, candidiasis; may cause regurgitation and adrenal gland suppression, so can be dangerous for use in stressed birds; used only when nothing else works; Fluconazole is a safer antifungal for treating candidiasis

**Ketoprofen (Orudis):** non-steroidal anti-inflammatory agent, for analgesia, arthritis

**Lactated Ringer’s Solution:** composed of sterile water, sodium, calcium potassium, chloride and bicarbonate; these components are in the same amounts and proportions as
Lactobacillus: preparation of nonpathogenic Gram-negative bacteria that promotes the reestablishment of normal bacterial flora in the gut, without which digestion of food and absorption of nutrients cannot occur; given orally

Lactulos solution: oral suspension; reduces toxins, restores GI flora in liver-damaged birds; carrier for oral meds; overdose causes diarrhea; caution in birds with diabetes mellitus; has been used as a laxative, although more recently for treating hepatic encephalopathy and other diseases that result in liver failure; Lactulose has also been used as a prebiotic and intestinal protective agent in birds exposed to toxins, particularly those affected by oil spills; It is not known whether the digestive tracts of exotic species, particularly birds, are able to digest lactulose; therefore, the effectiveness of this product in these species remains unclear

Leuprolide acetate (Lupron): drug to prevent ovulation, useful for sexually-related feather-picking and behavioral issues; for use in reproductive diseases; may be helpful in sexual aggression cases; reduces the production of estrogen; used with chronic egg-laying, particularly in cockatiels

Levamisole (Ripercol-L): used to treat intestinal roundworms; also to stimulate depressed immune systems; when used for this purpose it seems to restore certain immune mechanisms in white blood cells; also stimulates the production of T-lymphocytes. Given in drinking water or administered via feeding tube, or as injection

Levothyroxine (Levothroid): treatment for hypothyroidism, obesity, lipomas; however, hypothyroidism cannot be diagnosed by just one solitary thyroid test; hypothyroidism is very rare in pet birds and is probably over-diagnosed

Lincomycin or lincomycin: an oral or injectable antibiotic used for skin infections, pododermatitis (bumblefoot), bone infections; antibiotic that is effective mainly against Gram-positive bacteria, thus limiting its usefulness in parrot species, in which bacterial infections are usually of the Gram-negative variety. Administered orally

Lipotropin powder, sprinkled on food, chelator for liver, fat break up, used for fat packets near wing on chest

LS 50: Lyncomycin and spectinomysin: respiratory and alimentary tract infections caused by Gram positive bacteria. Respiratory/nasal infection, oral or injectable antibiotic for skin infections, dermatitis

Lugol’s solution: iodine solution used to treat certain thyroid conditions such as goite; added to drinking water; excess may cause thyroid hyperplasia; unnecessary if on formulated diet

Lupron: see Leuprolide acetate

Meloxicam (Mobic): is a COX-2 preferential nonsteroidal anti-inflammatory; it has analgesic, anti-inflammatory, and antipyretic (reduces fever) properties; used commonly in avian and exotic species, even though studies are lacking and the information of its use is anecdotal. Often used for arthritis, post-operative pain; few side effects when not used in
**Methoxyflurane (Metofane):** An inhalant anesthetic that gives excellent muscle relaxation but has the potential for liver damage and causes prolonged depressed body temperature.

**Methylprednisolone acetate (Medrol):** A corticosteroid, anti-inflammatory, may predispose a bird to aspergillosis and other mycoses, should be used with extreme caution; treats allergies, e.g. Amazon foot necrosis: given orally.

**Metoclopramide (Reglan):** An injectable or oral medication used for gastrointestinal motility disorders (regurgitation, slow crop motility); used for controlling vomiting, nausea; not to be used if GI obstruction, hemorrhage or hypertension present; not used for epileptics (lowers the threshold for seizures); caution in renally impaired; antagonized by narcotics; not used with monoamine oxidase inhibitors; often used for PDD sufferers.

**Metronidazole, (Nitroimidazole) (Flagyl):** An oral or IV injectable bacteriocidal antibiotic/antiprotozoal agent, an amebicide; treats anaerobic bacteria (such as Clostridium), hexamita, Giardia and other GI protozoal flagellates; caution in renal or hepatic impairment; may cause seizures, peripheral neuropathies, anorexia or GI upset; may enhance candidiasis; toxic in finches; seems not as effective in eradicating Giardia since many isolates seem to be resistant now, so for treating Giardia, Ronidazole may be a better choice.

**Mintezol (Thiabendazole):** Treats ascarid (roundworm) infestation of the gut, also gapeworm (Syngamus); Given orally.

**Myambutol: (Ethambutol):** Treats avian tuberculosis, acts to suppress the growth of the TB organism, given orally.

**Neocalglucon:** Oral preparation of calcium used as a dietary calcium supplement; given in drinking water.

**Niclosamide (Yomaesan):** Used to treat tapeworms; administered orally.

**Nystatin (Mycostatin):** An oral suspension used to treat candidiasis (yeast infection), medication must contact the organism, so used most often to treat oral or gastrointestinal candidiasis, some isolates of Candida are becoming resistant to Nystatin, so it may be used as a carrier for Fluconazole (a systemic antifungal agent); any baby bird on an antibiotic should also receive an antifungal agent to prevent secondary candidiasis; also Chlorhexidine or Ketoconazole are used as preventative for candidiasis in hand-fed baby birds being treated with other antibiotics, or in adult birds on long-term antibiotic therapy, especially of the tetracycline family; resistance common.

**Nyzoral:** Anti-fungal, effective against fungal dermatitis.

**Oxytocin (Pitocin):** A drug for use in humans and mammals that causes uterine contractions and milk letdown; has been used by injection in cases of egg-binding; however, since birds are not mammals, this is not the best, most effective drug to use, but it may help a hen lay an egg in certain cases; hormone used to aid in egg expulsion in egg-bound hens; acts to stimulate both the frequency and force of smooth muscle contractions in the oviduct; used to stop uterine bleeding; may cause cardiac arrhythmias.
Penicillin G (Procaine): the procaine in this injectable preparation used in small and large animals is very toxic in avian species and should not be used if safer antibiotics are available to treat the condition.

PEP-E: injectable amino acid supplement; an immune stimulant and nutritional supplement in anorexic and compromised birds; (anorectic: a medicine that suppresses the appetite)

Phenobarbital: an oral medication that can be used to try to control seizures in avian species, especially in cases of epilepsy; will diminish oviduct contractions; may cause osteomalacia (a disease that results from a lack of vitamin D or calcium, causing softening of the bones and resulting pain and weakness); caution in liver-impaired; shortens efficacy of Doxycycline.

Pimobendan: cardiovascular drug, a new cariotonic vasodilator (an agent that widens the blood vessels, which in turn decreases resistance to blood flow and lowers blood pressure. Drugs that act as vasodilators are used medically to treat high blood pressure and various other circulatory disorders); more tests are needed to determine effects in birds

Piperacillin (Pipracil): injectable antibiotic in the penicillin family, good broad-spectrum drug; excellent antibiotic alone or when combined with Amikacin; effective against many Gram-negative/Gram-positive bacteria, anaerobes, pseudomonas; excreted in urine and bile; good for liver infections, dog-bite wounds; contraindicated in neonates

Polysulfated glycosamine glycan (Adequan): cartilage precursor used for arthritis

Ponazuril: a new triazine coccidiocidal drug which specifically attacks the protozoan parasite from the phylum apicomplexa (this parasite attacks the central nervous system); appears to be safe and effective in a variety of vertebrate species; may prove useful against a variety of apicomplexans found in exotic species; further research is needed.

Praziquantel (Droncit): a dewormer that can be used to remove tapeworms and some flukes (trematodes); can be administered orally or by injection; it causes increased muscular activity in the intestine, causing the worms to lose their grip on host tissue; it destroys the skin of the tapeworm, making it susceptible to the host’s immune mechanism and results in destruction; given in food, by tube or injection; metabolized in liver; toxic to finches; caution in neonates and juveniles, (esp. African Greys)

Prednisone, Prednisolone: corticosteroids that are anti-inflammatory and immunosuppressive; may predispose birds to aspergillosis and other fungal infections; should be used only with extreme caution; given either orally, topically or by injection; may cause GI ulcers

Prepidil gel (Dinoprostone): topical, applied to utero-vaginal sphincter; allows for expulsion of egg

Primaquine: treats avian malaria; useful in killing malarial protozoa lodged in body tissues such as the liver, rather than those in the red blood cells; for this reason, it is almost always used in conjunction with an anti-malarial drug such as Chloroquine, which is effective against the protozoa residing in the red blood cells; given orally

Probiotics: a live microorganism that exhibits beneficial effects on the host’s health
beyond inherent basic nutrition; used in preventing and treating disease and promoting overall health in humans and animals; *Lactobacillus, Enterococcus, and Bifidobacterium* are most often used in human and animal commercial probiotics; more research is needed before practitioners will feel comfortable recommending them for their avian patients.

**Probiotics**

Probiotics are live microorganisms that are beneficial to the host. They are sometimes used to help prevent and treat disease and promote overall health in humans and animals.

- **Lactobacillus**
- **Enterococcus**
- **Bifidobacterium**

**Probucol (Lorelco):** used to lower cholesterol, control lipemia and lipomas; contains iron; use with caution in birds that are susceptible to hemochromatosis (a genetic disorder in which there is excess accumulation of iron in the body leading to damage of many organs, especially the liver and pancreas)

**Progesterone (Depo-Provera):** a hormone used to inhibit ovulation in hens with chronic egg-laying problems, given in injection

**Proguanil:** treats avian malaria; given intramuscularly

**Propylthioracil:** treats hyperthyroidism; acts to inhibit the formation of thyroid hormones; administered orally

**Prostaglandin E2 (Dinoprostone) gel:** for use in cases of egg-binding; placed into cloaca; will help deliver an egg (if not too large and there are no complications)

**Prostaglandin or Oxytocin:** to help passing of egg in egg binding

**Prozac, Doxepin, Haloperidol, Clomipramine, Naltrexone:** behavioral drugs; Prozac has a relatively low level of toxicity and relatively few side effects. It is even tolerated in patients with hepatosplenic disease. Toxic to finches can be given orally, and in many cases is effective after a single dose; uses are still being discovered

**Pyrantel Pamoate (Nemex):** an oral dewormer that is very safe and effective; to remove intestinal roundworms and other types of intestinal worms (except for tapeworms)

**Quinacrine (Atabrine):** oral medication rarely used to treat malaria (Plasmodium) in avian species; given orally via feeding tube; concentrates in liver, caution with liver impairment; may cause jaundice and seizures;

**Ryfadin (Rifampin, Rimactene):** used for avian TB; inhibits the growth of the tuberculosis organism and enhances the effectiveness of Isoniazid, with which it is combined; given orally; has numerous drug interactions; side effects are numerous and associated with most body systems; hepatotoxic; do not use with liver impairment; usually used with other drugs to treat mycobacterium (fungus); resistance occurs rapidly; absorption reduced with food

**Ronidazole:** oral antiprotozoal medication, very safe and efficacious for treating giardiasis in avian species; (however, not produced for use in the U.S., but is available through companies in this country that import the medication)

**Selenium and Vit E (Selsun):** used for neuromuscular disease in cockatiels

**Sevoflurane (Ultane):** newer inhalation anesthetic, similar to isoflurane; provides more rapid recovery
**Silver sulphadiazine (Silvadene):** topical; for burns, ulcers, under bandage; good to help rehydrate wounds when applied under a transparent dressing; if used over large areas, make sure hydration is maintained

**Silymarin:** milk thistle, digestive aid

**Sucralfate (Carafate):** for upper GI bleeding; given 1 hour before food or other drugs; may cause constipation; acts to form a protective barrier in the GI lining; treats stress ulcerations, esophagitis, duodenal ulcerations, GI ulcerations resulting from NSAID use, GI reflux disease; considered safe with few side effects

**Sulfachlorpyridazine:** powder antibiotic for susceptible bacterial infections of the gastrointestinal tract; also used to treat coccidiosis; not to be used in birds laying eggs

**Sulfadimethoxine (Albon):** an oral and injectable medication used to treat coccidiosis (a type of protozoa), Haemoproteus, Pasteurella, Salmonella in small psittacines; make sure hydration is maintained

**Tetracycline (Sumycin):** an older antibiotic that is bacteriostatic, was used for treating *Chlamydophila, Mycoplasma, spirochetes, rickettsiae* (a parasitic bacterium that typically lives inside ticks and can be transmitted to humans, causing Rocky Mountain spotted fever), forms of typhus, and other diseases; some aerobic and anaerobic bacteria are susceptible; also can be used to treat certain protozoal infections; rarely used as birds may not drink sufficient water

**Thyroxine (Synthroid):** thyroid supplement; may cause recrudescence (to become active again after a dormant period) of thymus in adults; toxic levels cause hypertrophic cardiomyopathy and heart failure

**Ticarcillin (Timentin):** effective against many Gram-positive and Gram-negative organisms including *Pseudomonas* and some anaerobes; resistance may develop rapidly

**Tramadol (Ultracet):** an opiate for pain management, used for past 25 years in humans; an analgesic for moderate to severe pain; combined with isoflurane to maintain anesthesia; also used in local anesthetics; more research needs to be done for use in avian species

**Triamcinolone:** a corticosteroid often found in topical preparations used for dogs and cats; can be dangerous when used topically in avian species; may predispose to aspergillosis and other fungal infections

**Trimethoprim/sulfamethoxazole (or Sulfadizine) (Bactrim):** oral, injectable; bacteriocidal antibiotic combination, used in geese for susceptible organisms

**Vecuronium Bromide:** can be used to dilate pupils in avian species

**Vermifuge:** for endoparasites such as threadworms, (capillaria); kills or expels internal parasites from intestinal tract

**Vincristine sulfate:** treatment for avian lymphosarcoma, possibly leukemia; given intravenously

**Vinegar:** can be used in drinking water (apple cider) to treat gastrointestinal yeast
infections, also can be applied topically to mucosa of cloaca (everted) to check for evidence of papillomas. **PLEASE NOTE:** HEATED vinegar emits toxic fumes similar to carbon dioxide. Bird owners have lost their pets by adding vinegar to their dishwashing cycle, or used it to clean coffee machines.

**Xylazine (Rompun):** injectable agent used for sedation (seldom used in avian patients); analgesic and sedative used in combination with ketamine to produce anesthesia; intravenously or intramuscularly

**Yohimbine (Aphrodine):** used to partially reverse Xylazine

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**Pharmaceutical Terms Commonly Used**

**Active Ingredient:** Any component that carries out an action or has a direct effect in the diagnosis, cure, mitigation, treatment, or prevention of a disease

**Assay:** A technique (test) for measuring a biological response or for determining characteristics such as composition, purity, activity, and weight.

**Bioassay:** The determination of the biological activity of a substance (e.g. a drug) by observing its effect on an organism (or organ) compared to a standard preparation.

**Compounding:** Combining a drug with other drugs or liquids such as simple syrup to form another, completed product which then meets the needs of the patient.

**Control Parameters:** Those operating variables that can be assigned values and are used as control levels.

**Drug:** A chemical entity that affects the processes of a living organisms or system

**Efficacy:** The ability of a substance to produce a desired effect.

**Extra-label Use:** or “off-label use”: The medication is used for a purpose not listed on the label, for a disease or condition that is not on the label, and uses the dosage amounts or other specifications that are not on the label.

**IM:** intramuscular administration of a drug into the muscle

**Imported drugs:** Drugs that are imported from another country. They are not legally imported from that county and might not be approved in other countries as well.

**IO:** intraosseus administration, delivers a drug into the bone

**IP:** administration of a drug directly into the peritoneal cavity

**IV:** intravenous administration of a drug is into the vein

**Loading Dose:** A relatively large dose of drug that is administered at the start of treatment. The intention is to reach therapeutic drug levels quickly. Loading doses are usually employed for drugs that reach steady-state levels slowly, or in cases where rapid
attainment of steady-state is desirable.

**National Formulary (NF):** A compendium of purity and testing criteria for chemicals, usually used in combination with the USP.

**NSAIDS:** Non-steroidal anti-inflammatory drugs (NSAIDs) are frequently used in avian medicine. They are painkillers and also are anti-inflammatory. They decrease the pain at the site of injury and are also given in cases of musculoskeletal, visceral (internal) pain, acute pain (from trauma or surgery) and chronic pain such as osteoarthritis. Piroxicam, Carprofen, Ketoprofen, Celebrex and Meloxicam are most often used for avian patients. They are contraindicated in patients with kidney or liver disease, shock, or if gastric ulcers are present. Patients should receive only one NSAID at a time, and practitioners should review cases of chronic pain frequently and alter the medication if necessary. NSAIDs should be prescribed on an as-needed basis.

**Nutraceutical:** A term that has been used by the pharmaceutical industry. It is not a legal term. It is used in reference to a nutritional supplement that has been seen to have some therapeutic effect in the treatment or prevention of a disease. It combines the terms “nutrient” and “pharmaceutical.”

**Parenteral Drug:** A drug intended for injection through the skin or other external boundary tissue, rather than by mouth, so that the active substances it contains are administered, using **gravity** or force, directly into a blood vessel, organ, tissue, or lesion. They are infused when administered intravenously (IV), or injected when administered intramuscularly (IM), or subcutaneously into the human body.

**Pharmacodynamics:** The branch of pharmacology that deals with the effects produced by a drug.

**Pharmacokinetics:** The branch of pharmacology that deals with the administration, uptake, distribution and elimination of drugs from the body.

**Potency:** Potency is a relative term that compares the ability of drugs to produce a given effect. If one drug can produce the same effect at a lower dose then it is more potent. Technically, potency is determined using dose-response analysis. Comparing the dose-response functions for 2 drugs for the same effect easily allows clear determination of potency. It is not always the case that a more potent drug is more desirable, as it may also be more potent in producing unwanted and bothersome side effects.

**Protocol:** A prospective plan, that when executed as intended, produces documented evidence that a Process or System has been properly qualified.

**Reconstitution** means adding a liquid to a dehydrated or freeze-dried powder. The finished product would meet the formula on the label. This is not compounding.

**Suspension:** A dispersion of fine solid particles in a liquid or gas, removable by filtration. A specific category of pharmaceutical product that must be in a suspension for proper action. For example, Kaolin/Pectin works as an adsorbent because of its high surface area in suspension.

**Tolerance:** Following exposure to a drug, there is a reduction in the response to
subsequent administration of the drug.

**Toxicity:** The ability of a drug or chemical to cause injury or adverse effects.

**Vehicle:** Any solvent or carrier fluid in a [pharmaceutical product](#) that has no pharmacological role. For example, water is the vehicle for xilocaine, and propylene glycol is the vehicle for many antibiotics.

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Information contained on this website is provided as general reference only. For application to specific circumstances, professional advice should be sought.