

A Guide to Drug Usage in Goats

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Extra-Label Drug Use

Live animals are considered unprocessed food if those animals are intended for slaughter or the milk from these animals is intended for human use. All persons involved in raising, handling, transporting, managing, and marketing food-producing animals are encouraged to establish systems and protocols to ensure that animal drugs are used properly to prevent illegal drug residues from contaminating human food.

There are few drugs for use in goats that have Food and Drug Administration (FDA) approval. The FDA approved drugs for use in goats are: Decoquinatate (Deccox®), Fenbendazole (Panacur®/Safeguard Suspension), Monensin (Rumensin® premix), Neomycin (neomycin soluble powder and liquid), Thiabendazole, morantel tartrate, and Ceftiofur (Naxcel). Administering any drug not specifically labeled for use in goats or any product, either prescription or over the counter, that is not used as directed on the label is considered “Extra-label” or “off-label” drug use. Only veterinarians may prescribe or use products “off-label” or “Extra-label” provided they have a ***valid veterinarian - client - patient relationship*** (VCPR) with the producer.

Most goat producers are unaware that they do **NOT** have “extra-label” drug use privileges. Only veterinarians who have established a VCPR with a particular client may prescribe or use drugs in an extra-label manner on that client’s animals if the animal’s health is threatened and suffering or death may result from failure to treat. To establish a VCPR, the veterinarian should have visited the farm, and have a thorough knowledge of the management of these animals, or has recently seen the animal to be treated. Once a VCPR has been established, the veterinarian may use drugs in an extra-label manner provided that the **client has agreed to follow his or her recommendations**.

Three Conditions of Extra-label Drug Use

The veterinarian has examined the animal(s) in question recently and has made a diagnosis and a determination that products with proper labeling will not work in this instance.

The client has been instructed by the veterinarian in the proper use and administration of the product, a withdrawal period has been determined, and the client is willing to follow the instructions given by the veterinarian.

The veterinarian is available to respond to any adverse reaction or follow up examination and treatment that may occur to the animal due to the administration of the drug or failure of the drug to work.

FDA Criteria for Using Pharmaceuticals Extra-Label

The FDA has also established five criteria that must be met before any drug may be used in a food-producing animal in a manner different from that product's label.

The veterinarian must first examine the animal and assumes responsibility for making clinical decisions regarding the health and treatment of the animal within the guidelines of a VCPR. Often a goat owner will not have the animal examined by a veterinarian, but will telephone a veterinarian, who may never have visited the farm, with a list of symptoms and ask for a recommended treatment.

The second criterion requires that the veterinarian determine there is no marketed drug specifically labeled to treat the diagnosed condition, or that the recommended dosage on the label for that product is clinically ineffective. Since there are few drugs labeled for use in goats, it is not difficult to determine whether or not there is a legally licensed product available.

The third criterion requires that the individual animals to be treated are clearly identified, and that accurate records be maintained regarding the treatment of those specific individuals. Many registered goats are either tattooed, ear-tagged, or notched for identification. If there is no permanent identification, the owner must make some effort to identify the treated animals with a visible temporary mark by using temporary tags or paint. If possible, these animals should be isolated. Records on animals and treatment must be kept for future reference to avoid any drug residues in the meat or milk.

The fourth criterion requires that a significantly extended time period be assigned for drug withdrawal prior to marketing meat or milk from treated animals when pharmaceuticals are used in an extra-label manner. The owner must keep accurate records of the treatment, namely the person treating this animal, date, route of administration, product used and a proper withdrawal period. Proper withdrawal period can be obtained from your veterinarian.

Most goat owners casually treat their animals and do not keep proper records of animals treated, drugs used or proper withdrawal period for that product. If no information is available to establish a withdrawal time, then the treated animal or animal products such as milk and meat are permanently barred from the human food chain.

The last criterion details the information that must be listed on the drug dispensed for extra-label use. The label should include the name and address of the veterinarian, the established name of the drug(s), and the specific directions for use including: dosage, routes of administration, frequency of treatment, duration of therapy, cautionary statements, and the withdrawal time for any food that might be derived from the treated animal.

Prohibited Drugs

Following the guidelines established in the Animal Medicinal Drug Use and Clarification Act of 1994 (AMDUCA), the following drugs cannot be used in an extra-label manner in food producing animals: **Chloramphenicol, Gentamycin, Clenbuterol, Diethylstilbestrol, Dimetridazole, Iprnidazole, other Nitroimidazoles, DMSO, Nitrofurazones, Fluoroquinolones, Dipyrone, Phenylbutazone (Dairy), and Glycopeptides (such as Vancomycin).**

According AMDUCA, extra-label use of medications in or on animal feed is prohibited. However, according to the 2001 Compliance Policy Guide (CPG) Sec. 615.115 Extra-label Use of Medicated Feeds for Minor Species, the FDA has provided guidance on extra-label use of medicated feeds in minor species such as goats. A copy of the CPG is available at http://www.fda.gov/ora/compliance_ref/cpg/cpgvet/cpg615-115.html. This CPG does **NOT** make the practice legal, but the FDA would “not ordinarily consider regulatory action” if certain conditions were met. In brief, these guidelines strongly recommend that extra-label use of medicated feed is limited to treatment of minor species whose health is suffering or is threatened or whose death may result from failure to treat. The medicated feed must be manufactured and labeled in accordance with the approved conditions of use and if the medicated feed is to be used in a food producing minor species, the product must be approved for use in a food producing major species. Finally, the CPG discourages use of medicated feed in an extra-label manner for improving rates of weight gain, feed efficiency, or other production purposes.

Drug Administration

Once the decision has been made to use a specific product in a goat, the owner must be informed of the proper storage, use, and administration of that product. Commercial goat dairies must meet the specific requirements of the Pasteurized Milk Ordinance for storage of drugs used in animals producing milk for human consumption. Access to drugs should be restricted, and producers should be reminded that animal health products can be human health hazards. Owners should be instructed in the proper methods and location for administration of injectable drugs. Adequately sized syringes and sharp, sterile needles of appropriate size and length should be used. Label directions for oral medications and feed or water additives should be easy to read and understand, and any directions for dilution of drugs should be clearly indicated. Some products added to feed or water may be harmful to other species and this must be stated on the label. It is extremely important to determine an adequate withdrawal time to prevent illegal drug residues in products for human consumption. Although there are no drug residue test kits marketed specifically for goats, owners should be aware that drug residue testing is conducted on milk and meat produced for human consumption.

Ten Drug Use Tips

1. **Read the label** carefully – labeling directions change frequently.
2. **Use drugs only in animal species listed on the label** – drugs used in other species may cause adverse reactions, illegal residues, and possible animal deaths.
3. **Use the proper dose** for the species and size of animal to be treated – overdosing can cause illegal residues.

4. **Calculate pre-slaughter drug withdrawal times** accurately – determine pre-slaughter withdrawal and milk discard times from the latest drug administration.
5. **Use the correct route** of administration – giving drugs incorrectly can lead to drug ineffectiveness, adverse reactions, illegal residues, and possible animal deaths.
6. **Do not “double dose”** – use of the same drug in the feed and by injection can cause illegal residues.
7. **Select needle size and injection sites carefully**, if injections are necessary – misuse can lead to tissue damage, reduced effectiveness, and/or illegal residues.
8. **Allow proper withdrawal times for feed containing drugs** – during the withdrawal time ensure that storage bins and feed are completely free of medicated feed and feed only drug-free feed or illegal residues may result.
9. **Keep accurate records** of drugs used and animals dosed – poor records can be costly if drug residue violations occur.
10. **Seek the advice of your veterinarian** – your records will allow him/her to provide safer and more effective treatment and save you money by preventing illegal residues.

For a complete explanation of all the precautions you need to take when using any particular drug or feed medication, first consult the **drug label** or **feed tag**. If you have any questions about the proper use of any drugs, see your **veterinarian**.

Veterinarians can play a vital role in educating goat producers about herd health quality assurance concepts through these three important avenues:

- ▶ Review of management practices with the client
- ▶ Establishment of a legal veterinary – client – patient – relationship
- ▶ Adherence to FDA guidelines for extra-label drug use.

Following the previously outlined practices will aid in the production of wholesome goat products free of drug residues.

Medications Commonly Used in Goats and Approximate Withdrawal Times

The following tables list medications commonly used in goats with their dosages and estimated withdrawal times (WDT). These tables are adapted, with permission from the author Dr. Seyedmehdi Mobini of Fort Valley State University, Fort Valley, GA, from a paper that appeared in the proceedings of the Georgia Veterinary Medical Association Food Animal Conference in 2003. These recommendations were formulated by Dr. Mobini through a review of the literature in the United States and foreign countries, recommendations of the Food Animal Residue Avoidance Databank (FARAD), and personal experience. For many of the drugs mentioned, FARAD has calculated a Withdrawal Interval (WDI) to distinguish from the regulatory and approved WDT. The WDI is based on foreign drug approvals or extrapolations based on available tissue residue and/or related pharmacokinetic data on these drugs. In some cases, there is insufficient or no pharmacokinetic data from which FARAD can derive a WDI for goats. In those instances, FARAD has relied on sheep or cattle data and then added a scientifically-based time period to extend beyond the approved WDT to ensure safety as well as compliance with the Animal Medicinal Drug Use and Clarification Act of 1994 (AMDUCA). Finally, the reader should be aware that there are several drugs which may be approved for specific species at a specific dose and route of administration, but are **PROHIBITED from extra-label use** in any major or minor food animal species. These include **Sulfadimethoxine (Albon), Enrofloxacin (Baytril), Dipyrone, Clenbuterol, Nitrofurans (Furacin), Nitroimidazole (Metronidazole), Diethyl stilbesterol, Glycopeptides (Vancomycin) and Chloramphenicol.**

Medications Commonly Used in Goats and Approximate Withdrawal Times*

I. Antibiotics:	Brand Name	Approval	Dosage	Route	Frequency	Withdrawal Time	
						Meat	Milk
Procaine Pen. G	Crysticillin	extra-label	10,000-20,000 IU/lb	SC	Once a day	16-21 days	120 hours
Benzathine Pen G	Pen BP-48	extra-label	20,000 IU/lb	SC	Every 48 hours	30 days	NA
Amoxicillin	Amoxi-inject	extra-label	5 mg/lb	SC	Once a day	25 days	120 hrs.
Ampicillin	Polyflex	extra-label	5 mg/lb	SC	Once a day	10 days	72 hrs.
Oxytetracycline	LA-200	extra-label	9 mg/lb	SC	Every 48 hours	50 days	144 hrs
Sulfadimethoxine	Albon	EXTRA - LABEL USE IS PROHIBITED					
Ceftiofur	Naxcel	approved	0.5-1 mg/lb	IM	Once a day	0 days	0 days
Erythromycin	Erythro-200	extra-label	1 mg/lb	SC	Once a day	5 days	96 hrs.
Tylosin	Tylan-200	extra-label	10 mg/lb	IM	Once a day	30 days	96 hrs.
Neomycin	Biosol	approved	5 mg/lb	PO	Twice a day	3 days	NA
Florfenicol	Nuflor	extra-label	9 mg/lb	IM	Every 48 hours	28 days	120 hours
Gentamicin	Gentocin	DO NOT USE					
Tilmicosin	Micotil	DO NOT USE – TOXIC TO GOATS					
Enrofloxacin	Baytril 100	EXTRA-LABEL USE IS PROHIBITED					

II. Anti-inflammatory Drugs:	Brand Name	Approval	Dosage	Route	Frequency	Withdrawal Time	
						Meat	Milk
Flunixin meglumine	Banamine	extra-label	1.1-2.2mg/kg	IV or IM	Once a day	10 days	72 hours
Phenylbutazone	Bute	extra-label	10-20 mg/kg	PO	Once a day	45 days	N/A
		DO NOT USE IN LACTATING ANIMALS					
Aspirin	Aspirin	extra-label	100 mg/kg	PO	Once a day	1 day	24 hours.
Dipyrrone	Dipyrrone	EXTRA-LABEL USE IS PROHIBITED					

III. Prevention of Coccidiosis:	Brand Name	Approval	Dosage	<u>Withdrawal Time</u>	
				Meat	Milk
Monensin	Rumensin	approved	15-20 gms/ton of feed	0 days	96 hours
Lasalocid	Bovatec	extra-label	20-30 gms/ton of feed	0 days	24 hours
Decoquinatate	Deccox	approved	13-91 gm/ton of feed	0 days	24 hours
Amprolium	Corid	extra-label	25-50 mg/kg BW in feed or water	2 days	48 hours

IV. Anthelmintics:	Brand Name	Approval	Dosage	Route	<u>Withdrawal Time</u>	
					Meat	Milk
1. Avermectins:						
Ivermectin	Ivomec Drench	extra-label	0.3 mg/kg	PO	14 days	9 days
Ivermectin	Ivomec 1%	extra-label	0.3 mg/kg	SC	56 days	40 days
Doramectin	Dectomax	extra-label	0.3 mg/kg	SC	56 days	40 days
Eprinomectin	Eprinex	extra-label	0.5 mg/kg	PO	NA	NA
Moxidectin	Quest, Cydectin	extra-label	0.5 mg/kg	PO	23 days	56 days
2. Benzimidazoles:						
Albendazole	Valbazen	extra-label	10 mg/kg	PO	7 days	120 hours
Fenbendazole	Panacur/Safeguard	approved	10 mg/kg	PO	14 days	96 hours
Oxfendazole	Synanthic	extra-label	10 mg/kg	PO	14 days	120 hours
3. Cholinergic Agonists:						
Levamisole	Levasole	extra-label	8 mg/kg	PO	10 days	4 days
Morantel Tartrate	Rumatel	approved	10 mg/kg	PO	30 days	0 days

V. Anesthetics and Tranquilizers	Brand Name	Approval	Dosage	Route	<u>Withdrawal Time</u>	
					Meat	Milk
Xylazine	Rompun	extra-label	0.05-0.1 mg/kg	IV or IM	5 days	72 hours
Ketamine	Ketaset	extra-label	5-10 mg/kg	IV or IM	3 days	48 hours
Thiamylal Na	Biotal	extra-label	10-20 mg/kg	IV	1 day	24 hours
Yohimbine	Yobin	extra-label	0.25 mg/kg	IV	7 days	72 hours
Lidocaine	Lidocaine	extra-label	Variable for local anesthesia use 1% in goats			

VI. Hormones:	Brand Name	Approval	Dosage	Route	<u>Withdrawal Time</u>	
					Meat	Milk
Oxytocin	Oxytocin	extra-label	10-20 IU	IM	0 days	0 days
Dinoprost	Lutalyse	extra-label	5-10mg	IM	0 days	0 days
Cloprostenol	Estrumate	extra-label	125 microgram	IM	0 days	0 days
Dexamethasone	Azium	extra-label	20-25mg	IM	14 days	4 days

VII. Electrolytes	Brand Name	Approval	Dosage	Route	<u>Withdrawal Time</u>	
					Meat	Milk
Calcium	Calcium borogluconate	extra-label	60 to 100ml of 20 to 25% Solution	IV	0 days	0 days
Calcium	Calcuim gluconate	extra-label	50 to 100ml 10 to 23% calcium ion solution	IV	0 days	0 days

In the tables above PO = oral administration; SC = subcutaneous administration; IM = intramuscular administration; IV = intravenous administration; NA = insufficient kinetic data available to make withdrawal interval estimation.

NOTE: The drugs listed above are commonly used in goats. There are only few drugs approved to be used in goats. The above withdrawal times for the various drugs are compiled from different sources. Extra-label use of these products is legal if prescribed by your veterinarian.

*Tables adapted from Mobini, S., 2003. Paper presented at the Georgia Veterinary Medical Association Food Animal Conference.

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