

COMMON PHARMACOLOGIC THERAPIES: ADULT DAIRY CATTLE



BASICS

OVERVIEW

- The purpose of this chapter is to provide a ready reference to some of the most commonly used pharmacologic therapies labeled for use in adult dairy cattle in the U.S. at the time this chapter was written (May 2016). The therapy list is not all-inclusive and drug approval status may change over time. The accuracy of these therapies should be verified by the reader against the official NADA approval information.
- Approved pharmacologic agents in the U.S. are assigned an NADA number and are labeled for a specific species and production class, indication, route of administration, dosage, frequency of administration, and duration of therapy. Product labels also include the appropriate milk and meat withholding times when the product is used according label instructions.
 - NOTE: An adult dairy cow is defined as a female dairy animal that is older than 20 months of age regardless of lactation status.
- A valid veterinary-client-patient relationship (VCPR) is a critical component of on-farm use of prescription and non-prescription medications by farm staff. Under a valid VCPR, the veterinarian should work with the farm in developing protocols regarding use of all medications on the dairy farm for treatment of commonly occurring, easily recognizable conditions.
 - NOTE: Every prescription or protocol is required to contain the following information: indication, drug, route of administration, dosage, frequency, duration, and meat/milk withdrawal following last treatment.
- AMDUCA regulations provide the rules that must be followed if drugs are used in a manner that is not included on the label.
 - The rules of AMDUCA clearly state that if an approved product is available and clinically effective, then extra label drug use is not appropriate. For this reason, it is important that dairy practitioners and veterinary students be familiar with products that are currently approved for use by the FDA in adult dairy cattle.
 - Certain products approved for use in lactating dairy cattle carry specific extra-label drug use restrictions:
 - Cephalosporins may be used off-label for indication only; dose, route, frequency and duration of use are restricted to label instructions.
 - Sulfonamide drugs are restricted to labeled use only.



MEDICATIONS

Labeled drugs approved for use in lactating dairy cattle, by indication

Example:

Active ingredient (concentration; trade name if applicable): dose, route, frequency; withdrawal information (Milk = milk withdrawal; Meat = meat withdrawal)

Control of inflammation

- Dexamethasone (2 mg/mL solution): 5-20mg/animal, IV or IM, once; Milk = 0 hrs, Meat = 0 d.
- Flunixin meglumine (50 mg/mL): 1.1-2.2 mg/kg (1-2mL/100lbs), IV only, full dose SID for up to 3 days or half dose BID for up to 3 days; Milk: 36 hrs, Meat: 4 d.
- Isoflupredone acetate (2 mg/mL, Predef 2X™): 10-20 mg/animal, IM, SID or BID, once; Milk = 0 hrs, Meat = 7 d.

Cystic Ovarian Disease

- Gonadorelin acetate (100mcg/mL; GONAbreed®): 1mL/animal, IM, once; Milk = 0 hrs, Meat = 0 d.
- Gonadorelin diacetate tetrahydrate or gonadorelin hydrochloride (50mcg/mL; Cystorelin®, Ovacyst®, Factrel®; 43mcg/mL; Fertagyl®) 2mL/animal, IM, once; Milk = 0 hrs, Meat = 0 d.

Dry-off Routine therapy

- Cephapirin benzathine (300mg tube; ToMORROW®): 10mL tube, IMM, 1 tube/quarter, once at dry off not within 30 days of calving; Milk = 72 hrs, Meat = 42 d.
- Cloxacillin benzathine (500mg tube; Dry-Clox®): 10mL tube, IMM, 1 tube/quarter, once at dry off not within 28 days of calving; Milk = 0 hrs, Meat = 30 d.
- Cloxacillin benzathine (500mg tube; Orbenin-DC®): 10mL tube, IMM, 1 tube/quarter, once at dry off not within 30 days of calving, Milk = 0 hrs, Meat = 28 d.
- Penicillin G/Novobiocin (200,000 IU/400 mg tube; Albadry Plus®): 10mL tube, IMM, 1 tube/quarter, once at dry off not within 30 days of calving; Milk = 72 hrs, Meat = 30 d.
- Ceftiofur hydrochloride (500mg tube; Spectramast® DC): 10mL tube, IMM, 1 tube/quarter, once at dry off not within 30 days of calving; Milk = 0 hrs, Meat = 16 d.
- Bismuth subnitrate non-antibiotic teat sealant (Orbiseal®): 4g tube, IMM, 1 tube/quarter, once at dry off; Milk = 0 hrs, Meat = 0 d.

Foot Rot

- Ceftiofur sodium or hydrochloride (50mg/mL; Naxcel®, Ceftiflex®, Excenel® RTU EZ): 1.1-2.2mg/kg (1-2mL/100lbs), IM or SQ, SID for 3 or 5 days; Milk = 0 hrs, Meat = 4 d.
- Ceftiofur crystalline free acid (200mg/mL; Excede®): 6.6mg/kg (1.5mL/100lbs), SQ at the base of the ear, once; Milk = 0 hrs, Meat = 13 d.
- Oxytetracycline (200mg/mL): 2.3mg/kg (2.5mL/100lbs), SQ or IV, SID for up to 4 days; Milk = 96 hrs, Meat = 28 d.
- Sulfadimethoxine 40% (400mg/mL): 55mg/kg 1st dose (7.8mL/100lbs) then 27.5mg/kg (3.9mL/100lbs), IV, SID for 3-5 days; Milk = 60 hrs, Meat = 5 d.
- Sulfadimethoxine (5g bolus; Albon®): 55mg/kg 1st dose (1 bolus/200lbs) then 27.5mg/kg (1 bolus/400lbs), PO, SID for 3-5 days; Milk = 60 hrs, Meat = 7 d.

Ketosis

- Dextrose 50% (0.5g/mL): 100-500mL/animal, IV, SID; Milk = 0 hrs, Meat = 0 d.
- Propylene glycol drench: labeled dose varies (average 300mL/animal), PO, SID or BID for up to 10 days, Milk Hold = 0 hrs, Meat = 0 d.

- Dexamethasone (2mg/mL solution): 5-20mg/animal, IV or IM, once; Milk = 0 hrs, Meat = 0 d.
- Isoflupredone acetate (2mg/mL, Predef 2X®): 10-20mg/animal, IM, once; Milk = 0 hrs, Meat = 7 d.

Luteolysis

- Dinoprost tromethamine (5mg/mL; Lutalyse®): 5mL/animal, IM, once; Milk = 0 hrs, Meat = 0 d.
- Cloprostenol sodium (250mcg/mL; Estrumate®): 2mL/animal, IM, once; Milk = 0 hrs, Meat = 0 d.

Mastitis

- Amoxicillin trihydrate (62.5mg; Amoxi-Mast®): 10mL tube, IMM, 1 tube/affected quarter, 3 treatments q 12 hrs; Milk = 60 hrs, Meat = 12 d.
- Cephapirin sodium (200mg; ToDAY®): 10ml tube, IMM, 1 tube/affected quarter, BID for 1 day; Milk = 96 hrs, Meat = 4 d.
- Sodium cloxacillin (200mg; Dariclox®): 10mL tube, IMM, 1 tube/affected quarter, 3 treatments q 12 hrs; Milk = 48 hrs, Meat = 10 d.
- Pirlimycin hydrochloride (50mg; Pirsue®): 10mL tube, IMM, 1 tube/affected quarter, SID for 2 days, or up to 8 days for extended duration therapy; Milk = 36 hrs, Meat = 9 d (2 treatments), 21 d (extended therapy).
- Ceftiofur hydrochloride (125mg tube; Spectramast® LC): 10mL tube, IMM, 1 tube/affected quarter, SID for 2 days, or up to 8 days for extended duration therapy; Milk = 72 hrs, Meat = 2 d.
- Hetacillin potassium (62.5mg; Hetacin-K®): 10mL tube, IMM, 1 tube/affected quarter, SID for 3 days; Milk = 72 hrs, Meat = 10 d.

Metritis

- Ceftiofur hydrochloride (50mg/mL; Excenel® RTU EZ): 2.2mg/kg (2mL/100lbs), IM or SQ, SID for 5 days; Milk = 0 hrs, Meat = 4 d.
- Ceftiofur crystalline free acid (200mg/mL; Excede®): 6.6mg/kg (1.5mL/100lbs), SQ at the base of the ear, twice 3 days apart; Milk = 0 hrs, Meat = 13 d.
- Oxytetracycline (200mg/mL): 2.3mg/kg (2.5mL/100lbs), SQ or IV, SID for up to 4 days; Milk = 96 hrs, Meat = 28 d.

Milk Fever

- Calcium gluconate 23% (.23g/mL): 250-500mL/animal, IV slowly, once but may be repeated in 12 hours as needed; Milk = 0 hrs, Meat = 0 d.
- Oral calcium bolus (43gm; Bovikalc®): 1 bolus/animal, PO, once immediately after calving, again 12 hours later; Milk = 96 hrs, Meat = 28 d.

Milk Let Down

- Oxytocin (20 USP/mL): 10-20 USP/animal (0.5-1mL/animal), IV IM or SQ, once repeated as necessary; Milk = 0 hrs, Meat = 0 d.

Parasite Control

- Eprinomectin pour-on (5mg/mL; Eprinex®): 1mL/10kg (1mL/22lb), topical, once; Milk = 0 hrs, Meat = 0 d.

- Moxidectin pour-on (5mg/mL; Cydectin®): 1mL/10kg (1mL/22lb), topical, once; Milk = 0 hrs, Meat = 0 d.

Pink Eye

- Oxytetracycline (200mg/ml): 4.1mg/kg (4.5mL/100lbs), SQ, once; Milk = 96 hrs, Meat = 28 d.

Pneumonia

- Ampicillin trihydrate (250mg/mL; Polyflex®): 2.3mg/kg (2mL/100lbs), IM, SID for 3 days, extended therapy up to 7 days; Milk = 48 hrs, Meat = 6 d.
- Ceftiofur sodium or hydrochloride (50mg/mL; Naxcel®, Ceftiflex®, Excenel® RTU EZ): 1.1-2.2mg/kg (1-2mL/100lbs), IM or SQ, SID for 3 or 5 days; Milk = 0 hrs, Meat = 4 d.
- Ceftiofur crystalline free acid (200mg/mL; Excede®): 6.6mg/kg (1.5mL/100lbs), SQ at the base of the ear, once; Milk = 0 hrs, Meat = 13 d.
- Oxytetracycline (200mg/ml): 2.3mg/kg (2.5mL/100lbs), SQ or IV, SID for up to 4 days; Milk = 96 hrs, Meat = 28 d.
- Sulfadimethoxine 40% (400mg/mL): 55mg/kg 1st dose (7.8mL/100lbs) then 7.5mg/kg (3.9mL/100lbs), IV, SID for 3-5 days; Milk = 60 hrs, Meat = 5 d.
- Sulfadimethoxine (5g bolus; Albon®): 55mg/kg 1st dose (1 bolus/200lbs) then 27.5mg/kg (1 bolus/400lbs), PO, SID for 3-5 days; Milk = 60 hrs, Meat = 7 d.

Udder Edema

- Furosemide 5% (50mg/mL): 10mL, IM or IV, SID; OR 5mL, IM or IV, BID not to exceed 48 hrs post-partum; Milk = 48 hrs, Meat = 2 d.

PRECAUTIONS

Pregnancy determination is essential prior to the use of most steroidal and luteolytic agents as abortion may result following administration.



MISCELLANEOUS

ABBREVIATIONS

- NADA = New Animal Drug Application
- AMDUCA = Animal Drug Use Clarification Act
- IM = intramuscular administration
- IMM = intramammary administration
- IV = intravenous administration
- PO = per os administration
- SQ = subcutaneous administration
- SID = once daily
- BID = twice daily
- q = every
- VCPR = veterinary-client-patient relationship
- hrs = hours
- d = days

SEE ALSO

- Drug Residues in Milk (www.fiveminutevet.com/ruminant)
- Extra-label Drug Use and Compounding (www.fiveminutevet.com/ruminant)
- Food Animal Residue Avoidance Databank (FARAD) (www.fiveminutevet.com/ruminant)

SUGGESTED READING

- FDA Green Book of Approved Animal Drug Products:
www.fda.gov/AnimalVeterinary/Products/ApprovedAnimalDrugProducts/default.htm
- AVMA website on AMDUCA:
www.avma.org/KB/Resources/Reference/Pages/AMDUCA.aspx
- Food Animal Residue Avoidance Databank (FARAD):
www.farad.org/
- Compendium of Veterinary Products:
www.bayerlivestock.com/show.aspx/resources/compendium-of-veterinary-products
- AABP VCPR Guidelines:
www.aabp.org/resources/aabp_guidelines/vcprguidelinefinal11-2013.2.pdf

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