

Proper Use of Sulfonamides in Market Show Animals

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When administering a drug to a show animal, the owner must take the usual care to be certain the proper dosage is given and that the drug is administered properly. But there is another concern—the requirement that market show animals have no detectable levels of drugs in their urine when tested at a show. While the product label specifies a drug's withdrawal time, or the time it takes a drug in the animal's tissue to reach a safe level for human consumption, the withdrawal time may be less than the time required for the urine to test negative.

When determining withdrawal times, the Food and Drug Administration Center for Veterinary Medicine (FDA-CVM) evaluates information from healthy animals. In an unhealthy animal, the time it takes a drug to reach safe levels in tissues, and to disappear from urine, can be longer than in a healthy animal.

One class of drugs, the sulfonamides, are of special concern when used in show market animals because, even though they may be administered correctly and the proper withdrawal times observed, residues could remain in the urine. This can happen if the owner fails to give the animal adequate amounts of water, without which there may

be crystallization in the kidneys. This lengthens the time the drug will be detectable in the urine. It can also happen if the animal continues to be exposed to the drug through the environment, even after the drug is no longer being administered. For example, the soil may contain sulfonamide excreted in urine and manure, or medicated drinking water may spill and accidentally contaminate the soil. If an animal ingests contaminated soil while grazing or feeding, its exposure to the drug continues.

Drug Information

Sulfonamides are organic sulfur compounds that contain the radical SO_2NH_2 . They are used as antibiotics to treat bacterial infections in humans and animals. Sulfonamides work by interfering with a bacterium's production of folic acid, which the bacterial cell needs for energy and reproduction. Sulfonamides have a limited effect on animal cells, which do not synthesize their own folic acid. Whether administered in feed, in water, by injection, or by mouth, sulfonamides are distributed throughout the body and into the soft tissues, including the cerebrospinal fluid and joints, and are excreted in the urine.

In animals, sulfonamides are used to treat conditions such as bacterial pneumonia, bacterial scours, coccidiosis, foot rot, calf diphtheria, acute mastitis and acute metritis.

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Sulfonamides are approved for a variety of animal species in a number of different forms. They are used to treat beef cattle, non-lactating dairy cattle, swine, chickens, carp, ewes, dogs, quail, horses and turkeys. Sulfonamides are administered intravenously, subcutaneously or orally. The oral forms are tablets or boluses administered by hand, or powders or liquids administered in drinking water. The dosages, durations and withdrawal times vary by species and product. Before administering a sulfonamide, or any drug, read the label. Table 1 lists examples of common sulfonamides approved in the U.S. for food-producing animals.

Regulatory Issues

When used improperly, sulfonamides can be hazardous to human health. While many steps have been taken to ensure that the food supply is safe from toxic levels of sulfonamides, they remain a top concern. The FDA-CVM has established a tolerance of 0.1 part per million for negligible residues of sulfamethazine in the uncooked, edible tissues of chickens, turkeys, cattle and swine.

The FDA-CVM is responsible for determining the marketing status (Prescription-Rx, Over-the-Counter-OTC, or Veterinary Feed Directive-VFD) of animal drug products. The agency bases

this determination on whether or not it is possible to prepare “adequate directions for use” under which a layperson can use a drug safely and effectively. A prescription animal drug is one the FDA-CVM has determined laypeople can not use safely and effectively without the guidance of a licensed veterinarian because of

- the drug’s toxicity or other potential for harmful effects,
- the method of its use, or
- the collateral measures necessary for its use.

Some sulfonamides are prescription animal drugs, while others are labeled for over-the-counter use.

Drugs in Market Show Animals

While drugs intended for medical purposes (such as antibiotics) and drugs used to enhance production (such as growth hormones) are approved for use in market show animals, some shows may not permit some medical drugs that are used as performance enhancers. Glucocorticoids such as dexamethasone may fall into this category. Other drugs that are not approved in market show animals include tranquilizers, local and systemic anesthetics, diuretics, caffeine, alcohol, and any other drug that is not medically indicated.

Table 1

| Trade Name | Species | Ingredient | Route of Administration | Drug Form |
|-------------------------------------|---------------------------|---|-------------------------|-------------------------|
| Agribon Soluble Powder Albon | Cattle, chickens, turkeys | Sulfadimethoxine | Oral | Powder |
| Aureomycin Sulmet Soluble Powder | Swine | Sulfamethazine chlorotetracycline bisulfate | Oral | Powder |
| S.E.Z. Drinking Water 6.25% | Cattle, swine | Sulfaethoxyipyridazine | Oral | Liquid |
| S.E.Z. Intravenous Solution | Cattle | Sulfaethoxyipyridazine | Intravenous | Liquid |
| S.E.Z. Oblets 15 G | Cattle | Sulfaethoxyipyridazine | Oral | Tablet |
| Sodium Sulfachloropyrazine Solution | Chickens | Sodium and sulfachloropyrazine monohydrate | Oral | Liquid |
| Sustain III | Cattle | Sulfamethazine | Oral | Sustained release bolus |

It is the responsibility of anyone who administers drugs to show animals to do so in accordance with the regulations on the drug's label. That means giving a drug to an approved animal species, for an approved indication, by an approved route of administration, and at an approved dosage as well as observing the approved withdrawal times, unless specifically directed by a veterinarian within a valid veterinarian-client-patient relationship.

Owners of show animals would be wise to remember that some drugs, such as sulfonamides, may be detectable in the urine longer than the withdrawal time on the product label. It is prudent to allow extra time after drugs are used to avoid a positive test result.

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