

Milk Antitrypsin As a Marker of Bovine Mastitis

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Abstract

Mastitis is associated with a leakage of small mol. wt. plasma proteins into milk. Milk antitrypsin is a sensitive indicator for mastitis. A colorimetric method for measuring blood-derived antitrypsin has been developed for monitoring for subclinical mastitis. There is a clear advantage of collecting the quarters separately and analyzing them in blocks: an inter-quarter evaluation reduces much of the physiological variation in basal antitrypsin levels among cows and increases the specificity of the assay. This holds for BSA and NAGase as well.

Introduction

Mastitis diagnosis can be based on the demonstration of increased permeability between the blood and milk compartments. Mastitis as an inflammatory process results in extravasation of plasma proteins into milk.

Milk BSA concentration has been suggested as a sensitive indicator for mastitis. The analysis is usually carried out by the radial immunodiffusion technique (1, 3, 6). α_1 -

antitrypsin was recently suggested as an indicator for mastitis (4, 5). Milk antitrypsin levels showed a good agreement with the BSA levels and somatic cell counts (4). Antitrypsin has the advantage over BSA that it can be quantified by its trypsin-inhibitor capacity using colorimetric procedures.

A high-capacity and inexpensive monitoring system will enable the veterinarian and the dairyman to maintain a constant record of mastitis in the herd. The present assay system was developed to identify the subclinically inflamed quarters in a herd during a single sampling. The system enables the cows to be analyzed on quarter basis, permitting a built-in security factor to be incorporated in the system. Automatic inter-teat evaluation gives this additional security.

The present investigation was carried out to study how the "threshold" for positive mastitis diagnosis has to be set in the antitrypsin assay. Maximum agreement with the bacteriological analysis was used as the criterium for setting the limits for "normal" and "abnormal" secretion.

Lutalyse® Sterile Solution (dinoprost tromethamine)

VETERINARY - For intramuscular use in cattle when regression of the corpus luteum is desired. This includes estrus synchronization, treatment of unobserved (silent) estrus and abortion of feedlot and other non-lactating cattle.

INDICATIONS AND INSTRUCTIONS FOR USE

Cattle - Lutalyse (dinoprost tromethamine) sterile solution is indicated as a luteolytic agent.

Lutalyse is effective only in those cattle having a corpus luteum, i.e., those which ovulated at least five days prior to treatment. Future reproductive performance of animals that are not cycling will be unaffected by Lutalyse injection.

1. For Intramuscular Use for Estrus Synchronization in Beef Cattle and Non-Lactating Dairy Heifers. Lutalyse is used to control the timing of estrus and ovulation in estrus cycling cattle that have a corpus luteum.

Inject a dose of 5 ml Lutalyse (25 mg PGF_{2α}) intramuscularly either once or twice at a 10 to 12 day interval.

With the single injection, cattle should be bred at the usual time relative to estrus.

With the two injections cattle can be bred after the second injection either at the usual time relative to detected estrus or at about 80 hours after the second Lutalyse injection.

Estrus is expected to occur 1 to 5 days after injection if a corpus luteum was present. Cattle that do not become pregnant to breeding at estrus on days 1 to 5 after injection will be expected to return to estrus in about 18 to 24 days.

2. For Intramuscular Use for Unobserved (Silent) Estrus in Lactating Dairy Cows with a Corpus Luteum. Inject a dose of 5 ml Lutalyse (25 mg PGF_{2α}) intramuscularly. Breed cows as they are detected in estrus. If estrus has not been observed by 80 hours after injection, breed at 80 hours. If the cow returns to estrus breed at the usual time relative to estrus.

3. For Intramuscular Use for Treatment of Pyometra (chronic endometritis) in Cattle. Inject a dose of 5 ml Lutalyse (25 mg PGF_{2α}) intramuscularly. In studies conducted with Lutalyse, pyometra was defined as presence of a corpus luteum in the ovary and uterine horns containing fluid but not a conceptus based on palpation per rectum. Return to normal was defined as evacuation of fluid and return of the uterine horn size to 40 mm or less based on palpation per rectum at 14 and 28 days. Most cattle that recovered in response to Lutalyse recovered within 14 days after injection. After 14 days, recovery rate of treated cattle was no different than that of nontreated cattle.

4. For Intramuscular Use for Abortion of Feedlot and Other Non-Lactating Cattle. Lutalyse is indicated for its abortifacient effect in feedlot and other non-lactating cattle during the first 100 days of gestation. Inject a dose of 25 mg intramuscularly. Cattle that abort will abort within 35 days of injection.

WARNINGS

Not for human use.

Women of child-bearing age, asthmatics, and persons with bronchial and other respiratory problems should exercise extreme caution when handling this product. In the early stages, women may be unaware of their pregnancies. Dinoprost tromethamine is readily absorbed through the skin and can cause abortion and/or bronchospasms. Direct contact with the skin should, therefore, be avoided. Accidental spillage on the skin should be washed off immediately with soap and water.

Use of this product in excess of the approved dose may result in drug residues.

PRECAUTIONS

Do not administer to pregnant cattle unless abortion is desired.

Do not administer intravenously (I.V.), as this route might potentiate adverse reactions.

Cattle administered a progestogen would be expected to have a reduced response to Lutalyse.

Aggressive antibiotic therapy should be employed at the first sign of infection at the injection site whether localized or diffuse. As with all parenteral products careful aseptic techniques should be employed to decrease the possibility of post injection bacterial infections.

ADVERSE REACTIONS

1. The most frequently observed side effect is increased rectal temperature at a 5x or 10x overdose. However, rectal temperature change has been transient in all cases observed and has not been detrimental to the animal.

2. Limited salivation has been reported in some instances.

3. Intravenous administration might increase heart rate.

4. Localized post injection bacterial infections that may become generalized have been reported. In rare instances such infections have terminated fatally. See PRECAUTIONS.

IMPORTANT

No milk discard or preslaughter drug withdrawal period is required for labeled uses.

DOSAGE AND ADMINISTRATION

Lutalyse is supplied at a concentration of 5 mg dinoprost per ml. Lutalyse is luteolytic in cattle at 25 mg (5 ml) administered intramuscularly. As with any multidose vial, practice aseptic techniques in withdrawing each dose. Adequately clean and disinfect the vial closure prior to entry with a sterile needle.

HOW SUPPLIED

Lutalyse Sterile Solution is available in 10 and 30 ml vials.

Caution: Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian.

(Bovine only)

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