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 colormetric 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.