ies contained a summary of one trial conducted on multiple trial sites whereas other studies reported multiple trials conducted at a single trial site. Over all the trials analyzed, monensin increased milk production (P=0.0001), milk protein yield (P=0.002), milk production efficiency (P=0.01) and body condition score (P=0.002). Monensin also decreased dry matter intake (P=0.001) milk fat percent (P=0.0001), milk fat yield (P=0.06), milk protein percent (P=0.0001), and body weight loss (P=0.0001). The effect size estimates for monensin on milk fat percent, milk fat yield, milk protein percent and milk protein yield were heterogenous and random effects models were utilized for these variables. Weighted means of the difference for milk production and dry matter intake suggested a 0.7 kg/day increase and a 0.4 kg/day decrease respectively. Meta-regression indicated that stage of lactation and topdress delivery of monensin influenced response. However, dietary factors were likely the primary explanation for heterogeneity in milk component responses since both pasture-based studies and studies with only one trial site (versus multiple sites) were significant in all models. More heterogeneity existed in single-based versus multi-based studies. Analysis of the subset ration data indicated that increasing days in milk at start of treatment, and increasing concentration of unsaturated fatty acids were associated with a greater effect of monensin on decreasing milk fat yield. The effect of monensin on milk protein yield was improved with increasing peptide balance.

Significance

Milk production is increased and dry matter intake decreased with monensin. This is a consistent response from study to study and the reason for an improved milk production efficiency. However, the impact of monensin on milk component yields are highly dependent on diet. Maximum benefit of monensin is achieved by being aware of the potential interactions of higher dietary levels of unsaturated fats, while ensuring a good rumen peptide balance.

Evaluation and Use of an Automated Human ß-hydroxybuturate (BHBA) Test for Cowside Detection of Subclinical Ketosis in Dairy Cattle

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Introduction

Prevalence of subclinical ketosis in dairy herds ranges from 6.9% to 34%. Subclinical ketosis can lead to decreased milk production and reproductive performance, increased risk of displaced abomasum and clinical ketosis. The gold standard diagnostic test for subclinical ketosis is the measurement of BHBA in serum or plasma. Thresholds to distinguish between normal and ketotic cows range from 1000 to 1600 ºmol/l of blood BHBA. Serum BHBA measurement is useful for examining individual cows and evaluating herd health. However, it is not convenient and is expensive for use as a routine cowside diagnostic test for the early detection of subclinical ketosis. Cowside diagnostic tests for ketosis (dipsticks or tablets)are based on the degree of color change. These tests can be used semi-quantitatively because the color change is more intense in the presence of higher levels of ketone bodies. Accuracy of the tests vary from test to test and from study to study. In human medicine electronic handheld blood glucose and ketone systems are used for diabetes monitoring. The objective of this study was to evaluate the precision and accuracy of an electronic BHBA measuring system (Abbot, Wiesbaden) for the use in dairy cattle.

Materials and Methods

A total of 244 dairy cows between 4 and 40 days after calving were used for the study. Blood, milk and urine samples were collected within an interval of up to 15 minutes. Blood samples were drawn from the coccygeal vein with vacuum tubes. Milk samples were collected after milking and urine samples from the urine stream after massage of the region underneath the vulva. One droplet of whole blood was used to load the sensor of the test-strip (Precision Xtra ß-ketone) according to the directions. The values displayed on the handheld meter were recorded onto a data capture form. Also, concentrations of BHBA in milk and urine were determined both and"with the electronic system and chemical dipsticks (Ketostix) cowside. Blood samples were centrifuged and serum was stored"Ketolac at -20°C. Within 8 days serum samples were analyzed for BHBA photometrically (Cobas Mias). Serum BHBA concentrations determined in the laboratory were regarded as the gold standard. Correlation coefficients (Pearson) were calculated between BHBA in serum and whole blood, milk and urine, respectively. Sensitivity and specificity of the different tests were determined.

Results

Coefficients of correlation between serum BHBA and whole blood, milk and urine determined with the electronic system were 95.2%, 71.9%, and 66.5%, respectively. Coefficients of correlation between serum BHBA and milk were 63.1%" and urine determined with Ketostix"determined with Ketolac and 63.9%, respectively. Based on thresholds of 1200 and 1400 ºmol/l BHBA sensitivity was 0.84 and 1.0 and specificity 0.93 and 0.91, respectively for the electronic BHBA measuring system. the positive and negative predictive values were 0.66 and 0.98 (1200 ºmol/l BHBA) and 0.51 and 1.0 (1400 ºmol/l BHBA), respectively. For both milk and urine, positive and negative predictive values were considerably lower both for the dipsticks as well as for the electronic system.

Significance

An automated electronic system to determine BHBA in whole blood is a useful and practical tool to diagnose individual cases of subclinical ketosis. Sensitivity and specificity are adequate for a cowside test. The accuracy of the electronic system was higher compared to two commonly used chemical). Additional studies are necessary to" and Ketolac"dipsticks (Ketostix further validate the electronic system for the use in dairy cattle.

Relationship between Keto-Test Results and Health and Reproduction Variables: a Retrospective Study using Data from Herd Health Visits in Private Practice

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Introduction

Cows in negative energy balance (NEB) can develop subclinical ketosis (SCK) and elevated Beta-hydroxybutyrate (BHB) concentrations in milk. A milk strip cow-side test (Keto-Test; KTST) can be used to measure BHB and initiate vet-client discussions about transition cow management and energy issues during regular herd health visits. The purpose of this study was to relate KTST results to first-breeding conception rate and to the incidence of some metabolic diseases.

Materials and Methods

In 22 herds followed by a single dairy practitioner in southern Quebec, milk from cows between 4 and 21 days in milk (DIM) at the time of herd health visit was tested usnig the KTST. Keto-Test results, as well as dis-