

Investigating the within-herd prevalence and risk factors for ketosis in dairy cattle in Ontario as diagnosed by the test-day concentration of beta-hydroxybutyrate in milk

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Introduction

A large-scale observational study was conducted to estimate the within-herd prevalence and cow-level risk factors for ketosis in dairy cattle in herds that participate in a dairy herd improvement association (DHIA) program in Ontario, Canada.

Materials and Methods

Ketosis or hyperketolactia (KET) was diagnosed as milk β -hydroxybutyrate ≥ 0.15 mmol/L at first DHIA test when tested within the first 30 days-in-milk (DIM). Seven hundred and ninety-one herds, providing at least 61 first-milk tests from June 2014 to December 2015, were used to estimate the provincial within-herd prevalence of KET. All herds on DHIA in Ontario (n=3,042) were used to construct cow-level multi-level logistic regression models to investigate the association of DHIA collected variables with the odds of KET at first DHIA milk test. Primiparous and multiparous animals were modelled independently.

Results

The cow-level KET prevalence in Ontario was 21%, with an average within-herd prevalence of 21% (SD=10.6) for dairy herds enrolled in a DHIA program. The prevalence

of KET had a distinct seasonality, with the lowest prevalence occurring from July to November. Automatic milking systems (AMS) were associated with increased within-herd prevalence, as well as increased odds of KET in multiparous animals at first test (OR: 1.46; CI₉₅: 1.30 to 1.63). Jersey cattle had 1.4 times higher odds of HK than Holstein cattle. Milk yield >57.3 lb (26 kg)/d and milk fat >4.8% at the last test of the previous lactation were associated with decreased odds of KET in the current lactation (OR_{yield}: 0.55; CI₉₅: 0.52 to 0.57; OR_{fat%}: 0.83; CI₉₅: 0.79 to 0.87). Increased days dry and longer calving intervals, for multiparous animals, and older age at first calving for primiparous animals increased the odds of KET at first test.

Significance

This study confirms previous findings that increased days dry, longer calving intervals, and increased age at first calving are associated with increased odds of KET at first test. It is the first report of increased odds of KET at first test in herds with AMS and in relation to milk yield and fat percent at the final test of the previous lactation. Feeding management on AMS herds likely contributes to the increased prevalence of KET, and further work is required to investigate modifications to current management practices on AMS herds to minimize risk.

Transition management practices on Wisconsin dairies stratified by Transition Cow Index™

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Introduction

The Transition Cow Index™ (TCI) is intended to provide an objective measure of transition cow management in a dairy herd. TCI represents the difference between the

actual first-test 305-day projected milk produced by a cow and a predicted yield, which is calculated using historical information from each cow. A negative TCI indicates under-performance, whereas a positive TCI indicates that an individual cow's performance has surpassed her predicted level