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Detection of Viable *Mycobacterium avium* subsp. *paratuberculosis* in Retail Pasteurized Whole Milk by Two Culture Methods and PCR

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ABSTRACT

Cattle with Johne's disease can shed live *Mycobacterium avium* subsp. *paratuberculosis* (MAP) in their milk, and MAP can survive under simulated commercial pasteurization conditions. In several studies conducted in the United Kingdom and Canada, MAP DNA has been detected in retail pasteurized milk samples; however, in one study in the United Kingdom viable MAP was identified in commercially pasteurized milk. A double-blind study involving two laboratories was undertaken to evaluate retail pasteurized whole milk in the United States. Marshfield Clinic Laboratories used solid culture medium (Herrold's egg yolk agar slants with mycobactin J and amphotericin B, nalidixic acid, and vancomycin), and TREK Diagnostic Systems, Research and Development used liquid culture medium (ESP culture system). Cultures at both laboratories were confirmed by PCR. A total of 702 pints of retail whole milk were purchased in three of the top five milk-producing states (233 from California, 234 from Minnesota, and 235 from Wisconsin) over a 12-month period and were tested for the presence of viable MAP. The criteria used for identifying samples as positive for viable MAP were similar to those followed by most laboratories (positive culture with PCR confirmation). The combined data from the two laboratories revealed the presence of viable MAP in 2.8% of the retail whole milk pints tested. Although the number of

samples containing viable MAP was similar among states ($P > 0.05$), there was a seasonal effect on the presence of viable MAP in retail milk ($P = 0.05$). More MAP-positive samples were identified during the third quarter of the year (July through September). Of the 22 brands of retail milk tested, 12 (55%) yielded at least one sample positive for viable MAP.

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