

# Accuracy of 12h-Petrifilm™-plates as a rapid on-farm test for evidence-based mastitis therapy on a dairy farm in Germany

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## Abstract

Antibiotic resistance is a highly discussed issue in society. The use of antibiotics in livestock husbandry is critically viewed. As a result, the European commission issued guidelines for the prudent use of antimicrobial agents in veterinary medicine in 2015 (EU 2015/C 299/04). Thus, alternative approaches for treating cows in the future are necessary. In particular, the treatment of mastitis, the most frequent disease in the dairy industry, causes a high use of antibiotics. Implementing an on-farm test to assign mastitis pathogens to classes of pathogens (Gram-positive, Gram-negative, no bacterial growth) before treatment decisions are made provides the basis for an evidence-based mastitis therapy concept. Rapid Aerobic Count plates and Rapid Coliform Count plates of 3M™ Petrifilm™ (3M™ Neuss, Germany) were used in combination as a 12h rapid on-farm test concept. The diagnostic sensitivity and specificity were evaluated in comparison to the standard laboratory examination. 129 mastitis milk samples from the quarters with clinical mastitis by a conventional dairy farm in Germany were used for evaluation. Results were examined 12 hours after inoculating the Petrifilm™-plates. The sensitivity for Gram-positive pathogens was 93.2%. For Gram-negative pathogens it was 88.9%. The specificity was 39.0% for Gram-positive pathogens and 97.5% for Gram-negative pathogens, respectively. To get good results, training the milking personnel in taking aseptic milk samples as well as inoculating and evaluating the test is inevitable. On the basis of the results the 12h-Petrifilm™ concept can serve as a basis for treatment decisions in the evidence-based mastitis therapy in dairy herds with a low percentage of infections with eukaryotic pathogens and can complement bacteriological culture.

*Keywords: dairy cow, clinical mastitis, rapid on-farm test, evidence-based mastitis therapy*