Letter to the editor: Comments on Schwaiger et al. (2012)

S. Pyörälä¹

Department of Production Animal Medicine, University of Helsinki, 04920 Saarentaus, Finland

The January 2012 issue of the *Journal of Dairy Science* included a “Hot Topic” paper on PCR diagnosis of mastitis (Schwaiger et al., 2012). Indeed, this topic is hot and deserves a few comments. Papers on DNA-based tests in mastitis diagnosis are very enthusiastic in describing sophisticated techniques but forget where their milk samples come from—the teat. Such DNA-based methods are very sensitive and PCR detection directly from the sample is prone to many pitfalls, including contamination. Even milk samples taken by the so-called aseptic technique are often contaminated. Contamination is an issue in conventional culturing as well, but the greater sensitivity and automatic interpretation of PCR-based tests makes it more critical. Sources of contamination include the barn environment (e.g., feces, feed, bedding, air), teat skin, and teat canal. Some idea of the diversity of species in the teat canal can be obtained from the recent article by Braem et al. (2012). The presence of microbes in a milk sample is not proof that the microbes caused the intramammary infection. Diagnosis of mastitis always needs supporting information, such as knowledge of the clinical signs and inflammation in the quarter.

In the study by Schwaiger et al. (2012), information on the samples ($n = 11$) was minimal; they were routine diagnostic samples. In reporting on possible new pathogens, detailed clinical data are indispensable. The authors claim that they detected a new mastitis-causing pathogen, *Helcococcus ovis*, but cannot exclude the possibility that the bacteria were contaminants. The presence of *Arcanobacterium pyogenes* and *Pep-toniphilus indolicus* in the same samples supports this

possibility because the latter species are typical opportunists found in the barn. When reporting a new species that may cause mastitis, I would expect a very detailed description of the cases. Moreover, it would be preferable to detect the bacteria in the udder, not just in the milk sample. The good old Koch’s postulate—the 4 criteria designed to establish a causal relationship between a causative microbe and a disease—should be remembered in the context of mastitis.

It is clear that DNA-based techniques for mastitis diagnostics have a great promise. One commercial quantitative PCR test is already in use for routine mastitis diagnosis. In contrast to many methods using conventional culturing, DNA-based tests are void of subjective interpretation and can accurately detect less common pathogens. However, before introducing DNA-based tests into large-scale use, they should be validated and the interpretation criteria agreed upon so that the role of contaminants can be excluded as much as possible. Aseptic technique in collecting milk samples is even more important for DNA-based PCR methods than for conventional culture methods.

REFERENCES

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¹Corresponding author: satu.pyorala@helsinki.fi