

Quality Assurance Tools in Milk-Testing Laboratories– The View of an Instrument Manufacturer

D. Schwarz

¹ FOSS Analytical A/S, Foss Alle 1, Hilleroed, Denmark
das@foss.dk (Corresponding Author)

The objective of this work is to provide an overview on a) the validation and certification of FOSS's milk analysers, b) working with FTIR technology/data and standardisation as part of quality assurance as well as c) quality assurance for new milk-testing parameters.

Besides extensive internal as well as field testing of milk analysers, FOSS seeks for thorough validation and certification of its instruments according to internationally accepted standards, like ISO 8196, performed by independent organisations. In terms of the Fossomatic™, legislation dictates that only certified milk analyser are approved for enumeration of somatic cell count in payment samples in the EU and the USA. Beyond that, additional national approvals might be required in some countries. In terms of the analysis of the composition of milk primarily approvals on national level are required so far. The newly available ICAR certification service for milk analysers, however, covers the validation of both somatic cell counter and milk component analyser. It is further thought to replace national approvals with the ICAR certification and thus contribute to the optimisation of the validation and certification process of milk analysers around the world. Besides fulfilling regulatory requirements, the validations and certifications can generally be used to demonstrate the performance of an instrument. Furthermore, the international ICAR validation would allow laboratories to implement new instruments by simply verifying them according to ISO 17025 using reference materials and proficiency tests.

Fourier Transform InfraRed (FTIR) spectrometry as applied on MilkoScan™ instruments is nowadays a commonly used technique for analysis of milk samples on fat, protein, and lactose and more recently other minor components such as urea, BHB, and acetone. Beyond that, the spectra data are more and more utilised to describe a dairy cow's health and welfare status and possibly other conditions as precisely as possible. In this context, the standardisation of spectra is of outmost importance to make data comparable and transferable. Furthermore, actual possibilities and limitations of FTIR technology need to be considered.

The implementation of new parameters on high-throughput milk analysers for laboratories often requires the availability of appropriate reference methods to allow confirmation of accuracy of results generated on the high-throughput instrument. In the example of ketosis screening, which is based on the prediction of BHB (and acetone) using MilkoScan™, an official reference method is not available. However, in Canada and France, quality assurance programmes based on wet-chemistry methods were developed and are used successfully since. In the example of the new differential somatic cell count (DSCC) parameter a reference method is lacking. But initial work on this subject has begun within the International Dairy Federation (IDF).

In conclusion, FOSS aims to allow quality assurance working with its milk analysers by obtaining different certifications and supporting the development of analytical methods, reference materials, and proficiency testing programmes. Besides, raw milk holds a wealth of valuable information that can help us to make significant improvements in the dairy milk supply. Hence, the development of new parameters, quality assurance tools, and effective communication of data are clearly in the interest of FOSS.