

Screening for abnormalities in milk

A new testing option to improve food safety

Raw milk containing abnormalities is a growing problem worldwide. The abnormalities can be caused by the deliberate adulteration of the supply or by accidents, for example, if different types of milk are mixed.

To help combat the problem, FOSS has released a new software module for its MilkoScan™ analysers. The Abnormal Spectrum screening software Module (ASM) allows MilkoScan analysers based on Fourier Transform Infrared (FTIR) technology to be programmed to screen for abnormalities in milk. The screening is done at the same time as the compositional measurements are performed. No extra equipment or time is required.

A sample of milk is tested against a profile for normal milk. A warning is given if there is a mismatch. This alerts the user to the need for further testing to determine the nature of the abnormality.

The screening concept introduces a new and convenient testing option for routine milk testing. As MilkoScan analysers are widely used by dairies and central milk

testing laboratories, the ability to screen for abnormalities can make a significant and far reaching contribution to global food safety. The ASM option allows you to look at milk samples in a new way to:

- Screen milk samples for a broad variety of abnormalities – both new and known
- Check whether different milk types are mixed up
- Monitor milk for consistent quality of milk products

Fingerprinting raw milk

The technology behind the screening option is based on Fourier Transform Infrared (FTIR) used by several FOSS MilkoScan analysers.

Natural raw milk has a particular infrared spectrum – a unique fingerprint. Using FTIR analysis, it is possible to program an analyser to recognise the spectra (or fingerprint) representing pure raw milk. A warning is then given when samples do not meet the criteria for pure milk. If the sample is somehow different from pure

milk it will be detected immediately.

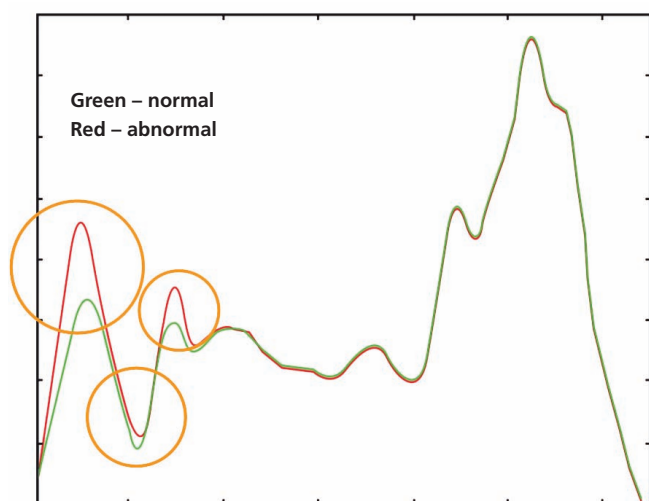
Screening for known and unknown abnormalities

Some examples of use of the screening module include testing for:

- Cleaning agents
- Milk mixing
- Addition of water
- Protein and fat adulterants

In practice, ASM allows screening for an unlimited number of unknown and known potential adulterants, for example, some of the known adulterants could include lard, cleaning agents and melamine. Warning levels can be set for these known adulterants.

The limiting factor for both known and unknown abnormalities is defined by the mid infrared wavelength range used by the MilkoScan analysers. This covers a vast range of potential abnormalities. ■



Natural raw milk has a particular spectrum – a unique fingerprint. If the sample is somehow different from normal milk it will be detected immediately with spectrum screening as shown by the red line for an abnormal sample against the normal shown in green.



Detail of display showing preset warning level for urea content in milk samples. Samples exceeding the threshold are shown in blue.