

TVC count measured with the freshdetect BFD-100 comparable to traditional laboratory method

An independent expert opinion confirms the usability of the freshdetect BFD-100 using minced meat as an example. The hand-held measuring device BFD-100 from FreshDetect GmbH uses a non-invasive method to determine the fluorescence signatures that change in the event of bacterial infestation and displays the total bacterial count (GKZ) within seconds. Previously available methods such as laboratory analyses take several days and make a control time-consuming and expensive.

A series of tests carried out by the independent laboratory MicroMol GmbH in Karlsruhe was designed to show whether the handheld device provides results that are comparably accurate as those obtained by the traditional laboratory method.

The main results of the study are:

- The microbial load determined by the classical method and the test device was linearly correlated ($R^2 = 0.53$)
- Microbial counts of $\leq 6.0 \log_{10}(\text{cfu/g})$ determined by the classical method were slightly overestimated by the freshdetect device in most cases
- The overall correlation error of the test device was determined to be $\text{RMSE} = 0.88 \log_{10}(\text{cfu/g})$. Hence, the observed error was lower than specified by the manufacturer
- The measuring error of the test device was found to be in the range from 0.72 to 0.86 log-units
- The reproducibility of the test device measurements was determined to be 46% higher compared to the classical method

The slight overestimation of microbial counts keeps the risk of relevant deviations very low. Some samples exceeded the warning value when measured with the classical method, while the test device yielded values below the threshold. This is expected for a comparison of two error-prone methods. However, all these values were found to be within the correlation error range, i.e. are close to the warning value. For such values, the freshdetect BFD-100 can be used to quickly and cost-effectively record additional measurement data and thus make a statistically relevant statement about critical samples.

Under consideration of these aspects, the freshdetect BFD-100 might be suitable for the quick on-site determination of microbial loads on meat surfaces for example to carry out trend measurements. Also, root cause analysis for process deviations become feasible. Subjective sensory tests regarding the microbial burden can be objectified with the test device and due to its non-invasiveness the freshdetect device enables the reduction of material loss due to sampling. The ability of the freshdetect BFD-100 to predict microbial loads on meat surfaces was demonstrated in the present study.

The full report can be downloaded here:

<https://www.freshdetect.com/en/news/downloads/>