

APPLICATION NOTE

Analysis of raw meat and meat products using Finder SD Rotator

Introduction

For meat producers fast and reliable analysis of key parameters like fat, moisture, protein and collagen is essential. While traditional analytical methods take several hours, Near Infrared Spectroscopy (NIRS) can provide these parameters within seconds.

Instrumental

The HiperScan Finder SD is a thermally stabilised, MEMS based Scanning Grating Spectrometer which acquires spectra within the range of 1000 - 1900 nm. The samples are measured in open glas petri dishes (Ø 94 mm) which are placed in the rotator unit. This allows an easy measurement, requires minimal cleaning and minimises the risk of cross-contamination.



Performance

The performance of the calibration is summarised in the following table.

Parameter	N _{cal}	Range	R _{cal}	SEC	RMSECV	SEP	R _{val}	RPD
Fat	505	0 – 86 %	0,99	2,2	2,83 %	2,8	0,99	5,3
SFA	198	0 – 20 %	0,98	1,0	1,03 %	1,3	0,97	4,3
Protein	507	3 – 35 %	0,98	1,2	1,28 %	1,5	0,97	4,3
BEFFE	498	0,5 – 30,0 %	0,97	1,5	1,62 %	1,7	0,96	3,4
Water	503	10 – 75 %	0,99	2,1	2,17 %	2,1	0,99	6,6
Ash	359	0 – 6,0 %	0,97	0,4	0,48 %	0,6	0,95	3,2
Salt	358	0 – 5,0 %	0,97	0,3	0,44 %	0,6	0,93	2,8

Calculation of further parameters is possible, for example: collagen, hydroxyproline, BEFFE in FE, Federzahl.



Samples

The calibration can be used for the analysis of samples of:

- + pork
- + beef
- + poultry
- + lamb
- + horse

For the measurement the samples were grinded to 3 mm and measured at a temperature between 3 and 15 °C.

The reference methods include classical reference analysis like Kjeldahl for proteins, hydroxyproline for collagen and BEFFE and Soxhlet for fat (LFGB §64-methods).

At the moment the calibration includes around 500 samples, but the database is continuously enhanced and extended.