

Quick measurement of raw meat quality parameters

NIRFlex N-500 with Solids Cell, NIRMasteR, B-400 Mixer

Moisture, Fat, Protein, and Connective Tissue Protein measured by Near Infrared Spectroscopy

1. Introduction

Fast determination of critical process parameters in raw meat products, such as moisture and macronutrient content, is prerequisite to achieving optimal manufacturing efficiency and final product quality.

With the state-of-the-art FT-NIR spectrometer, these parameters can be measured rapidly and simultaneously, with minimal sample preparation, and with accuracy comparable to laboratory reference methods.

2. Samples

The N555-501 pre-calibrated application is suitable to analyse the raw meat of:

- Beef
- Pork
- Chicken, Turkey
- Goat, Lamb
- Horse
- Wild animals

Inclusion of hundreds of samples spanning several countries within each pre-calibration has resulted in robust calibrations with broad applicability. These countries include:

- Switzerland
- Italy
- Germany
- Portugal
- Several Asian Countries.

3. Instrumentation/ Experimental

3.1 Spectrometer:

- NIR Solutions Laboratory: NIRFlex N-500 Solids with Petri Dish Add-On
- NIR Solutions At-line: NIRMasteR Pro/ NIRMasteR Pro IP65



Each sample is scanned in triplicate at ambient temperature



3.3 Sample preparation: Using a BUCHI Mixer B-400, grind the sample until it reaches uniform consistency. Then, transfer the ground product to the NIR sample cup until the fill is approximately 1-cm or greater

4. Performances

The predictions guaranteed by BUCHI pre-calibrations are summarized by the following table.

Table 1: Summary of parameters available in the N555-501

Parameter	Range
Moisture [%]	12.5 - 80.0
Fat [%]	0.4 - 83.2
Protein [%]	3.9 - 26.3
CTP ¹ [%]	0.01 - 18.10
Ash [%] *	0.6 - 4.6
BEEFE ² [%] *	2.2 - 24.1

*Parameter under development, available separately

1. Connective Tissue Protein
2. BEEFE = Protein - CTP

5. References

Dago C. D, Vranic B, Campolongo G, Ferrari F. (2013). At-Line Determination of Different Quality Parameters of Fresh Meat Using NIR Spectroscopy, Proceedings of 16th ICNIRS Conference, Montpellier

6. Contacts

For more detailed information please contact your local BUCHI representative or explore the "Applications" section at www.buchi.com.