



DETERMINATION OF THE SUPPLEMENT CONTENT IN MINCED BEEF MEAT

INTRODUCTION

A modern meat processing company requires modern technologies and methods for fast control of the raw stuff and prefabricated products. It is important not only for control of the production process but also for control of supplied raw stuff. Lumex, together with National Research Institute for Meat Processing Industry, develops calibration for the method of determination of animal protein, dry soya, and carrageenan in samples of minced beef meat by NIR spectroscopy using InfraLUM® FT-10 NIR analyzer.

MEASUREMENT METHOD

The measurement ranges for the components are listed in the table.

Component	Measurement range, %
Animal protein	0 – 5
Dry soya	0 – 25
Carrageenan	0 – 3
Wheat flour	0 – 9
Dry milk	0 – 2

Experiments showed that samples of beef meat can be included in the calibration model with mixed samples prepared from beef meat and poultry.

ADVANTAGES OF THE METHIOD

- Rapid analysis (determination of parameters in 3 minutes)
- Low analysis cost (no reagents and consumables needed)
- Simple measurement procedure

EQUIPMENT

- InfraLUM® FT-10 analyzer
- Cell for meat samples
- Personal computer

Data acquisition, processing and output are performed using a personal computer running under WINDOWS® 2000/XP/7 operating system with installed SpectraLUM/Pro® software package.

PREOPERATIONAL PROCEDURES

The following actions should be made before proceeding to the measurements:

- Calibration of the analyzer;
- Sampling and sample preparation.

Calibration of the analyzer

Calibration process involves the following steps:

- Selection of the samples for the calibration, the range of the content values of these reference samples should cover the whole measurement range.
- Reference analysis should be made by standard wet chemistry methods.
- Transmission spectra of the reference samples should be measured.
- Creation of a calibration model that establishes relation between the content of a component with the spectral data

As a rule, calibration is made by LUMEX specialists.

Sample preparation and sampling

Sampling and sample storage is made in accordance with standard procedures. The collected samples are grinded with a meat grinder. The samples can be stored in air tight cans no longer than 6 hours at room temperature.



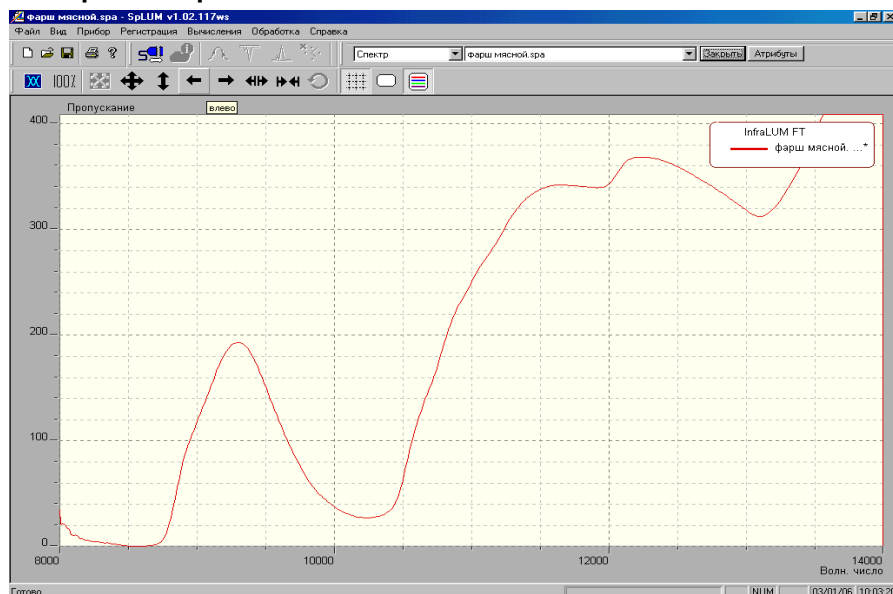
MEASUREMENT PROCEDURE

The sample is put in the cell of the InfraLUM® FT-10 analyzer and the measurement is made automatically.

DATA PROCESSING

Result of the measurement (content of the constituents in the analyzed sample of minced meat is calculated automatically by SpectraLUM®/Pro and displayed on the PC screen.

Example of a spectrum of minced meat



In addition to the method for meat products analysis by NIR spectroscopy, Lumex Instruments has also developed a method for fish and sea food analysis and other related methods.

The contents of this paper are subject to change without notice.

The information in this leaflet is supplemental. To get more specific information on this method, please contact the developer of this method Lumex Instruments Ltd.

LUMEX INSTRUMENTS Head Office: pr. Obukhovskoi Oborony, 70, Bldg. 2, St. Petersburg, 192029 Russia

Postal address: P.O. Box 1234, St.-Petersburg, 190000, Russia

Tel. +7 (812) 718-5390; **E-mail:** lumex@lumex.ru; **www.lumex.biz**