

Analysis of Moisture, Protein, Fat and more in Dry Petfood using the DA 7250

Introduction

In the production of petfood several parameters require close monitoring. Parameters such as moisture, protein, fat, fiber and ash content have great impact on production costs, product quality, and nutritional value for proper feeding.



The Near Infrared Reflectance (NIR) technique is very well suited for measurement of these parameters. The technique is also time efficient and easy to use.

DA 7250 NIR Analyzer

The DA 7250 is a proven, full-spectrum NIR instrument designed for use in industries like petfood manufacturing. Using novel diode array technology it performs a multi-component analysis in only 6 seconds. Thanks to excellent signal-to-noise ratio and solid state optics no grinding is required.



During the fast analysis, a large number of full spectra are collected and averaged. As the sample is analyzed in an open dish, the problems associated with sample cups are avoided and operator influence on results is minimal.

Experimental

Spectral data was collected from up to more than 900 samples of petfood from various manufacturers. The samples were analyzed as received with no grinding or other sample preparation. Reference analyses were supplied by the manufacturers.

Using Multivariate calibration tools, the collected data was pretreated to reduce scatter and calibrations were developed using the regression method Partial Least Squares (PLS).

Results and discussion

The results shows that the DA 7250 predicts values very close to values from reference methods. Statistics are presented in the tables below for Dogfood and Catfood respectively. Graphs for Moisture, Protein and Fat in dogfood are displayed on page 2.

Table 1. Dogfood statistics

Parameter	Range (%)	Sample	R
Moisture	4.0 - 10.8	600+	0.93
Protein	12.6 - 35.7	900+	0.97
Fat	1.8 - 36.4	900+	0.97
Fiber	0.7 - 5.3	200+	0.81
Ash	3.9 - 18.0	200+	0.91

Table 2. Catfood statistics

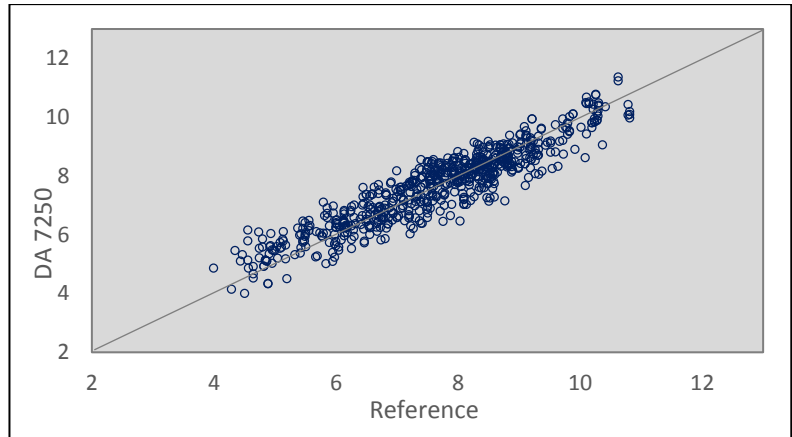
Parameter	Range (%)	Sample	R
Moisture	2.4 - 11	100+	0.97
Protein	19.1 - 44.5	200+	0.98
Fat	8.2 - 24.2	200+	0.97
Fiber	0.7 - 5.3	200+	0.81
Ash	3.9 - 18.0	200+	0.91

The differences between the DA 7250 and the reference methods are of the same magnitude as typical differences between two different reference labs. The DA 7250 is more precise than the reference methods meaning that replicate analyses are much more repeatable and representative.

In summary, it can be concluded that the DA 7250 is well suited for analysis of dogfood and catfood. It is also time efficient and easy to use especially since no grinding is required for analysis.

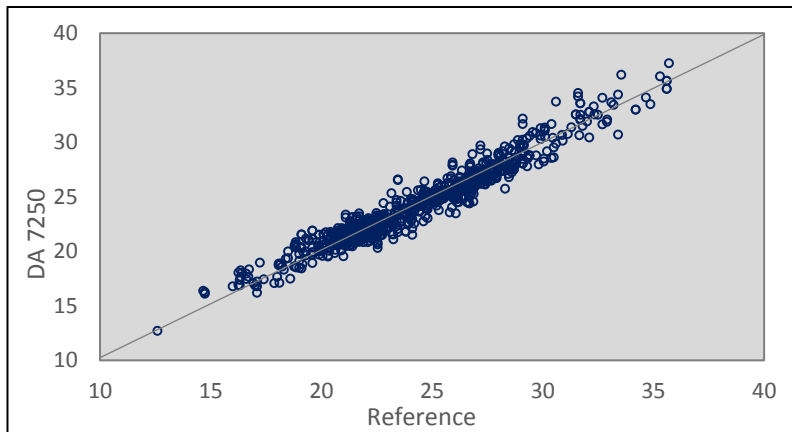
Moisture

The DA 7250 accurately determines moisture in dogfood. Calibration range is 4.0 – 10.8%



Protein

Samples from 12.6 – 35.7% protein are covered by the calibration for protein in dogfood.



Fat

Dogfoods with fat content up to 36.4% are covered by the calibration. The calibration is most stable for samples in the range 2 – 24%

