

Nitrogen & protein determination in feed

KjelDigester K-449, KjelMaster K-375 with KjelSampler K-376:

Nitrogen and Protein Determination in Feed According to the Kjeldahl Method by Digestion with Kjeldahl Tablets and Hydrogen Peroxide Followed by Colorimetric Titration

1. Introduction

A reliable and efficient method for the determination of total nitrogen and protein in feed, according to ISO 5983-2 [1] and AOAC 2001.11 [2], is presented.

2. Experiment

Sample:

Certified reference material BCR® - 708: dairy feed with a declared protein content of 24.0 g/100 g and an uncertainty of 1.2 g/100g, European Commission, Joint Research Center
Rabbit feed with a declared protein content of 12.5 g/100 g purchased at a local supermarket.

Equipment:

KjelDigester K-449 (the parameters used are also valid for the K-446)
Scrubber K-415 TripleScrub^{ECO}
KjelMaster K-375 with colorimetric sensor
KjelSampler K-376 (the parameters used are also valid for the K-377)

Procedure:

The sample is digested, distilled, and titrated.

Table 1. Parameters and Setting for the K-375 / K-376.

Parameters	Setting
Reaction time	5 s
Distillation time	180 s
Titration type	Boric acid
Sensor type	Colorimetric



3. Results

The Results of the determination of the nitrogen and protein content in rabbit feed and dairy feed are shown in Table 2.

Table 2. Results of the determination of the nitrogen and protein content in rabbit feed and dairy feed (n=5).

Sample	Ø Nitrogen content [%]	RSD [%]	Ø Protein content [%]	RSD [%]
Rabbit feed	1.96	0.71	12.23	0.71
Dairy feed	3.70	0.45	23.62	0.45

4. Conclusion

The determination of nitrogen and protein in feed using the KjelDigester K-449 and KjelMaster system K-375 / K-376 by colorimetric titration provides reliable and reproducible results. The here found results correspond well to the labelled values of the rabbit and reference material for dairy feed with low relative standard deviations (RSD). For further information please download the full application note from the website.

5. References

Application Note No. 186/2015: Nitrogen & protein determination in feed

[1] ISO 5983-2 Animal feeding stuffs – Determination of nitrogen content and calculation of crude protein content, Part 2: Block digestion and steam distillation method

[2] AOAC 2001.11: Protein (Crude) in Animal Feed, Forage (Plant Tissue), Grain, and Oilseeds

Application Note 083/2012, Nitrogen and Protein Determination in Animal Feed with Kjeldahl Tablets and Hydrogen Peroxide

Application Note 113/2013: Nitrogen and Protein in Dry Pet Food

Technical Note 179/2015: Colorimetric titration procedure using Sher indicator

Application Note 085/2012: Nitrogen and Protein Determination in Animal Feed According to the Kjeldahl Method

KjelOptimizer App