Comparison of different Kjeldahl Tablets for the Determination of Nitrogen and Protein in Meat Products according to the Kjeldahl Method

SpeedDigester K-436, K-439, KjelMaster K-375 with KjelSampler K-376

1. Introduction

An easy and reliable method for determining nitrogen and protein contents in meat products according to the Kjeldahl method, as described in the ISO 937-1978 (E), LFBG §64 L06.00-7, and AOAC 928.08 regulations. In a first step, the new BUCHI Kjeldahl Tablets for performing standard Kjeldahl were compared with each other to learn more about the advantages each type of tablet has for digesting fatty samples.

2. Experiment

Sample:

Salami, with a declared protein content of 25 %, and a fat content of 32 %
Smoked turkey, with a declared protein content of 21 %, and a fat content of 2 %

Equipment:

SpeedDigester K-436, K-439 (the parameters used for the K-436 are also valid for the SpeedDigester K-425)
Scrubber K-415 TripleScrub^{ECO}
KjelMaster K-375 with KjelSampler K-376

Procedure:

First the sample is homogenized and then digested. After the digestion the sample is distillated and titrated.

Table 1. Distillation and titration parameters with K-375 / K376.

Parameters	Settings
Reaction time	5 s
Distillation time	180 s
Titration type	Boric acid
Sensor type	Potentiometric

3. Results

The results of the recovery of protein in smoked turkey are shown in Table 2. More recoveries are shown in the Application Note No. 077/2012.

Table 2. Results of the recovery of protein in smoked turkey with the K-439 after difertent digestion time (n=3).

Tablet	Time [min]	Ø measured Protein content [%]	RSD [%]
Titanium	60	20.4	0.6
ECO		20.2	0.3
Missouri		20.4	0.2
Titanium	90	20.8	0.1
ECO		20.5	0.2
Missouri		20.6	0.1
ECO	120	20.9	0.3
Missouri		20.9	0.2

4. Conclusion

The determination of nitrogen and protein contents in smoked turkey and salami with the help of the different types of Kjeldahl Tablets provides reliable and reproducible results which correspond to the labelled values of the sample products with low relative standard deviations. The total digestion time can vary between 90 and 120 min depending on the type of Kjeldahl Tablets and digestion unit used and can therefore be adapted to meet the individual needs. For further information please download the full application note from the website.

5. References

Application Note No. 077/2012: Comparison of different Kjeldahl Tablets for the Determination of Nitrogen and Protein in Meat Products according to the Kjeldahl Method
Application Note 001-437_370-03C: Operational Quality Check Procedure
AOAC 928.08
ISO 937-1978 (E)
LFGB §64 L06.00-7
Operation manual of SpeedDigester K-425 / K-436
Operation manual of SpeedDigester K-439
Operation manual of Scrubber K-415
Operation manual of Kjeldahl sampler system K-375 / K-376