

Comparison of different Kjeldahl Tablets for the Determination of Nitrogen and Protein in Milk 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 milk according to the Kjeldahl method, as described in the ISO 8968-1:2001, LFGB §64 L01.00-10/1, and AOAC 991.20 regulations.

2. Experiment

Sample:

Whole milk with a labelled protein content of 3.5 g/100 ml,
 Strawberry milk drink with a labelled protein content of 3 g/100 ml

Equipment:

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

Procedure:

First the sample is homogenized by shaking, and then the sample is digested.
 After the digestion the sample is distilled and titrated.

Table 1. Distillation and titration parameters and settings of the K-375 / 376.

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



3. Results

The results of strawberry milk drink are shown in Table 2. Further results are shown in the Application Note No. 078/2012.

Table 2. Results of the recovery of protein in strawberry milk drink (n=3).

Tablet	Distillation Time [min]	Ø measured Protein content [%]	RSD [%]
Titanium		2.9	0.2
ECO	85	2.8	3.1
Missouri		2.9	0.2
ECO	115	2.9	0.0
Missouri		2.9	0.1

4. Conclusion

The determination of nitrogen and protein contents in whole milk and strawberry milk 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 85 and 115 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. 078/2012: Comparison of different Kjeldahl Tablets for the Determination of Nitrogen and Protein in Milk according to the Kjeldahl Method
 AOAC 991.20
 Kessler, H.-G.: Lebensmittel-und Bioverfahrenstechnik, Molkereitechnologie, Verlag A. Kessler, Freising, 4. Auflage 1996
 DIN EN ISO 8968-1:2001
 LFGB §64 L01.00-10/1
 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