1. SCOPE AND PURPOSE:

This method measures nitrogen, calculated as crude protein, in foods, feeds, ingredients, and animal feeding stuffs. Crude protein is calculated from protein content based on established protein factors for specific protein sources, wheat and wheat products (cereal, bread, macaroni) (PRWH), milk and milk products (cheese, butter, cream) (PRCH), and all other dry (PRKR) and wet (PRWE) feeds, foods, grains, ingredients, roughage, nuts, and gelatin (PRKG). Total Kjeldahl nitrogen may be reported on any dry or wet (KN, KNWE, KNTS) sample mentioned above.

2. PRINCIPLE:

2.1. Nitrogen containing compounds in the sample are reduced using boiling sulfuric acid in the presence of a mixed catalyst (potassium sulfate/titanium dioxide/cupric sulfate) to form ammonium sulfate. The ammonium sulfate solution is made alkaline with a sodium hydroxide solution, liberating ammonia which goes into a known amount of standard acid. The distillate is titrated and nitrogen is calculated from the known amount of standard acid solution consumed in the reaction. Crude protein content is calculated from total nitrogen using established protein factors.

2.2. Specific test codes are used depending on the sample matrix:

- 2.2.1. Wheat and wheat products (cereals, bread, macaroni) are tested using test code PRWH to apply a protein factor of 5.7.
- 2.2.2. Milk and milk products are tested using code PRCH to apply a protein factor of 6.38.
- 2.2.3. Gelatin samples uses a protein factor of 5.55 (PRKG).
- 2.2.4. Other proteins and protein blends are tested using test codes PRKR (low moisture products) or PRWE (high moisture products) to apply a protein factor of 6.25
- 2.2.5. If total Kjeldahl nitrogen is requested, without conversion to protein, test codes KN (low moisture samples), KNWE (high moisture samples, or KNTS (mg nitrogen per sample)

2.3. Using a 1 g sample, the lowest confidence level of this method is 0.1% protein (0.02% nitrogen).

2.4. Known Interferences:

- 2.4.1. Nitrogen from urea, and non-protein organic nitrogen sources will be measured and calculated as protein, if present.
- 2.4.2. There is no assurance that matrices other than those listed can be assayed using this method.

3. PRECISION:

Records of method precision based on Method Validation and/or known control summaries are located in the QA Master file for this test method. Assay precision may vary with test matrix and analyte level. Terms used to describe method precision are defined in NPSOP3000, *Validation of Quantitative Chemical Tests*.

4. REFERENCES:

Official Methods of Analysis of the AOAC International, Method 988.05; Method 920.87; Method 991.20

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