The digestion

Digestion: \[\text{C}_n\text{H}_m\text{N}_o\cdot\text{H}_2\text{SO}_4 = \text{CO}_2 + \text{SO}_2 + \text{H}_2\text{O} + \text{N}_2\text{H}_4\]\n
Organic matter is destroyed by boiling in concentrated sulfuric acid. Kjeldahl Tablets raise the boiling point and accelerate the process.

The distillation and boric acid titration

Distillation: \[\text{N}_2\text{H}_4 + \text{OH}^- = \text{NH}_3 + \text{H}_2\text{O}\]

The digestion mixture is diluted with \(\text{NaOH}\) prior to distillation to free up the ammonia. The ammonia is steam distilled into an acidic receiver solution.

The titration

Receiver: \(\text{BOH}_3^- + \text{NH}_3 + \text{H}_2\text{O} = \text{BO}_2\text{H}_4^- + \text{NH}_4\text{OH}\)

The pH in the acidic receiver solution rises upon addition of ammonia. The nitrogen and protein content is then determined by titration of the borate complex.

The result calculation

\[\text{mg N per kg sample} \times 1000 = \left( \frac{V(1) - V(\text{Bl})}{F \times c \times f \times M(N)\%} \times \frac{\text{mg N}}{1000} \right) \times \text{PF} \times \text{f} \times \text{t} \times \text{c} \times \text{f} \times \text{m} \times \text{1000} \]

The factors for the conversion of nitrogen in protein

\[\text{Amount of protein (mg/kg sample)} = \frac{\text{Amount of N (mg/kg sample)}}{\text{Conversion factor of nitrogen to protein}}\]

Foods include:
- Meat
- Fish
- Eggs
- Milk
- Nuts
- Beans
- Vegetables
- Cereals
- Grains

\[\text{mg per kg sample} \times 1000 = \left( \frac{V(1) - V(\text{Bl})}{F \times c \times f \times M(N)\%} \times \frac{\text{mg N}}{1000} \right) \times \text{PF} \times \text{f} \times \text{t} \times \text{c} \times \text{f} \times \text{m} \times \text{1000} \]