

Method for Determining Protein Solubility in Soybean Meal

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1. Sample Preparation

- Grind SBM sample in laboratory mill to pass through a 0.5 mm screen.
- Split into two fractions, one for total protein determination of the SBM and the other for potassium hydroxide treatment.

2. Potassium Hydroxide Treatment

- Weight 1.5 grams (± 0.001 g) of the SBM sample into a beaker
- Add 75 ml of 0.2% (0.36 normal, pH 12.5) potassium hydroxide
- Stir for 20 min on a magnetic stir plate
- Centrifuge at 2,700 rpm for 15 minutes
- Filter supernatant through glass wool into a beaker, being careful to avoid transferring
- Centrifugate transfer 15 ml supernatant, into two Kjeldahl tubes, for duplicate analysis – (this gives a 0.3 g aliquot of the original SBM sample)
- Add 12.5 ml concentrated H_2SO_4 Kjeltabs and 2 ml H_2O_2 to each tube, use this solution for nitrogen determination

3. Nitrogen Determination

- Using the Kjeldahl method:
 - determine total nitrogen of supernatant, prepared above
 - determine total nitrogen of original SBM sample

4. Calculating Protein Solubility

Protein solubility is expressed as the soluble protein fraction (from supernatant) as a percentage of the total protein in the soybean meal.

Reference

Araba, M. and N. Dale, 1990. Evaluation of protein Solubility as an Indicator of over processing Soybean Meal. Poultry Science. 69: 76-83.