**Abstract**

Iodine is an essential trace element for the human body because it is necessary for the production of thyroid hormones (T3 and T4). Iodine deficiency can lead to goiter, hypothyroidism, and cretinism. A dietary source of iodine deficiency in the USA is iodine deficiency in the soil. In order to meet the dietary needs of the population and ensure a healthy iodine status, the United Nations released a new guideline for iodine deficiency. This is to avoid the use of seaweed to improve iodine status in the population. The purpose of this study was to determine the iodine content in feed samples and characterize the methods used to determine the iodine content. The study was conducted to determine the iodine content in feed samples and to develop a method for the determination of total iodine in feed samples. The study was conducted in the laboratory setting and the results were analyzed using ICP-MS.

**Materials and Methods**

**Chemicals and Reagents**
- Analytes: 127I
- Standards: 125Te and 50 ng/mL
- Calibration standards: 0.5, 2.5, 10
- Weighed Fit

**Sample Preparation**
- Materials and Methods
- AOAC official methods 934.02 and 935.14
- Gravimetry and gamma-ray solubilization of iodine from seed and plant-derived feed was achieved.
- After microwave assisted base digestion in choline hydroxide solution, a new method of sample preparation and ICP-MS determination of total iodine was achieved.

**Discussion**

**Test Results**
- Test results of multiple CRMs were within the range of the Certified or Reference Values (Table 4).
- The rodent diet was derived from maize grain. RSD and recovery results of maize grain and rodent diet showed good accuracy and precision in total iodine determination (Table 3).
- The test results of multiple CRMs were within the range of the Certified or Reference Values (Table 4).

**Conclusions**

The ICP-MS analytical method was successfully validated with satisfactory accuracy and precision for both maize & rodent diet samples.

**References**