

METHOD SPECIFICATION
Faculty of Biosciences, NMBU

Method name: Various minerals

BIOVIT No.: Msp1078

1. Method of analysis / Principle / Main instrument

This method can be used to determine the mineral composition and the total amount of various minerals in organic and most inorganic samples, both in solid and liquid state. Various minerals can be used as a marker in digestive studies of fish (Yttrium, Y Arb1073) or in metabolic experiments on ruminants (Chromium, Cr and Yttrium (Yb) Arb1071)).

LabTek has per 022020 standards with control for the following minerals: **Macro: Ca, K, Mg, Na, P. Micro: Zn, Y, Fe, Mn, Yb Cu, Se and Cr. We can identify: As, Cd, Co, Mo, Ni, and V.**

Sample decomposition during digestion is the most critical part of the analysis as incomplete digestion can have a great influence on the result. The loss of analyte during sample preparation step must also be eliminated. An effective method is to use microwave digestion with acid as everything takes place in a closed system.

The minerals are determined spectrophotometrically using MP-AES (Microwave Plasma Atomic Emission Spectrometer), which has better sensitivity and is much faster than ordinary flame atomic absorption (AA).

Main instrument: MP-AES 4200 (Agilent Technologies)

2. Reference and any modifications

Commission Regulation (EC) No 152/2009. 27 Jan 2009. Laying down the methods of sampling and analysis for the official control of feed. Annex III, P, Official Journal of the European Union L54 / 1 from 26/02/2009.

- METHODS OF ANALYSIS TO CONTROL THE LEVEL OF AUTHORISED ADDITIVES IN FEED (PART: C. DETERMINATION OF THE TRACE MINERALS IRON, COPPER, MANGANESE AND ZINC) page 72-76.

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- Modifications:
 - For decomposition: Application Note PRO-AG-02; Dried Plant Tissue (Milestone Srl).
 - Instrument: MP-AES 4200 (Agilent Technologies)

3. Requirements for grinding and temperature

Degree of grinding: 0.5 mm.

4. Contact persons:

Lab manager: Hanne Kolsrud Hustoft

Responsible for analysis: Øystein W. Milvang/Milena Bjelanovic

5. Additional literature

- 1) Austreng, E. Storebakken, T., Thomassen, M. Refstie, S., Tomassen, Y., 2000, Aquaculture, 188, 65-78.
- 2) Reis, P., Valente, L., Almeida, M., 2008, Food Chemistry, 108: 3, 1094-1098.

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