**METHOD SPESCFICATION**

**Faculty of Biosciences, NMBU**

**Method name: Starch**

BIOVIT no.: Msp1159

**1. Method of analysis / Principle / Main instrument**

This method is intended for analyzing starch in grain products / fertilizers / rumen and intestinal contents, etc. In grain products, starch makes up the largest part of the carbohydrates. Starch is made up of maltose units. The three-dimensional structure of the starch is broken down into water-soluble shorter chains by the addition of α-amylase. In the next step, amyloglucosidase enzymes are used to convert the shorter chains to glucose. The concentration of glucose is finally determined as a color reaction with a spectrophotometer (RX4041 RX Daytona +, England).

Starch amylase partially degraded starch amyloglucosidase glucose

**Main instrument:** RX Daytona + (Randox Laboratories Ltd, UK).

**2. Reference and any modifications**

AACC Method 76-13-01: Total Starch Assay Procedure

* Megazyme Amyloglucosidase / Alpha-Amylase Method

(Also Corresponds to AOAC method 996.11- Starch (Total) in Cereal Products)

**3. Requirements for the degree of grinding**

For the analysis, 100 mg ± 5 mg sample is required.

Samples with> 8% fat must first be extracted with acetone to remove fat.

Samples with> 4% sugar must first be extracted with 80% ethanol to remove free sugar.

If the sample is to be acetone- or ethanol-treated, a 120 mg ± 5 mg sample is needed.

Degree of grinding: 0.5 mm.

Dry samples are stored at room temperature.

**4. Contact persons:**

**Lab leader:** Hanne Kolsrud Hustoft

**Responsible for analysis:** Milena Bjelanovic / Elin Follaug Johnsen

**5. Additional literature**

* McCleary, B.V., Solah, V., Gibson, T.S. (1994) Quantitative Measurements of Total Starch in Cereal Flours and Products. Journal of Cereal Science 20: 51-58.
* McCleary, B.V. Gobson, T.S., Solah, V., Mugford, D.C. (1994) Total Starch Measurement in Cereal Products: Interlaboratory Evaluaton of a Rapid Enzymic Test Procedure. Cereal Chemistry 71: 501-505.

**6. History - instrument transitions and method modifications**

Instrument transition 1995: from Encore to Cobas Mira S spectrophotometer (March-1995)

* Modified 11.01.00 after transition from Roche to ABX reagents.
* Modified 12.02.04 after transition from ABX reagents to Pentra reagents.

Instrument transition 2010: from Cobas Mira to MaxMat (August-2010)

* Method modification after transition to MaxMat spectrophotometer with reagents, controls and standard from ILS Laboratories ScandinaviaAS.

Instrument transition 2018: from MaxMat to RX Daytona + (October-2018)

* Method modification after transition to RX Daytona + with reagents, controls and calibrators from Randox Laboratories Ltd, United Kingdom.