DETERMINATION OF TRYPTOPHANE IN FODDERS AND RAW MATERIALS BY CAPILLARY ELECTROPHORESIS

INTRODUCTION
The method enables fast quantitative determination of amino acid tryptophane in feeds, mixed fodders, and raw materials.

MEASUREMENT METHOD
Capillary electrophoresis for the determination of tryptophane is based on differential migration of its ionic form in a quartz capillary under the influence of the applied electric field. Identification of tryptophane is made by measuring its own absorbance at 219 nm wavelength in a borate buffer at 40 °C. Basic hydrolysis of fodder sample is done according to a certified protocol in closed containers with 1.5 M barium hydroxide for 16 hours at 110 °C. After removal of the excess of the base the treated solution is analyzed by capillary electrophoresis.

RANGES OF PERCENTAGE OF TRYPTOPHANE
Measuring range in percentage for tryptophane is 0.1–2.0 %(w/w) of the analyzed fodder. The presence of other amino acids does not influence its determination.

EQUIPMENT AND REAGENTS
The “CAPEL®-105/105M” capillary electrophoresis system with a special capillary cassette for the amino acid analysis is used in measurements.
All reagents must be of analytical grade or higher.
Data acquisition, collection, processing and output are performed using a personal computer running under “WINDOWS® 2000/XP” operating system with installed dedicated software package for acquisition and processing of chromatography data.

EXAMPLES OF REAL ANALYSES
Buffer: borate (pH 9.18)
Capillary: L_eff/L_tot 65/75 cm;
          ID 50 µm
Injection: 150 mbar x sec
Voltage: + 20 kV
Temperature: + 40 °C
Detection: 219 nm

Sample: fish flour (100 mg)
Measurement results:
1 – tryptophane (0.78%)

Sample: meat-bone flour (100 mg)
Measurement results:
1 – tryptophane (0.52%)

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