



Analysis of Abamectin via QuEChERS and LC-MS/MS

- Brief Description -

Standards:

Abamectin: for example from Dr. Ehrenstorfer GmbH, Germany, Purity 95 % (91.5 % Avermectin B1a and 3.5 % Avermectin B1b)

Sample Preparation (QuEChERS):

- Weigh 10 g of the homogeneous, frozen sample into a 50 ml centrifugation tube
- Add 10 ml acetonitrile and 100 µl internal standard solution (e.g. triphenylphosphate c = 20 µg/ml); close the tube and shake vigorously for 1 min.
- Add 4 g Magnesium sulphate anhydrous, 1 g sodium chloride, 1 g trisodium citrate dihydrate and 0.5 g disodium hydrogencitrate sesquihydrate and shake for 1 min; centrifuge for 5 min at 3000 rpm
- Transfer an aliquot of the extract into a centrifugation tube which contains 25 mg PSA and 150 mg magnesium sulphate per mL extract; shake the tube vigorously for 30 s and centrifuge for 5 min at 3000 rpm.
- Fill an aliquot of the extract into a vial and employ for LC-MS/MS analysis

Analysis by LC-MS/MS *(Please consider: the LC-MS/MS data is exemplary)*

Instrument: API 3000, Applied Biosystems

Mode: ESI positive

The mass-transitions used are as follows:

- **Avermectin B1a:** 890.5 → 567.4; 890.5 → 305.1; 891.5 → 568.1
- **Avermectin B1b:** 876.6 → 553.3; 876.6 → 291.2;
- **Z-isomer of avermectin B1a:** 890.5 → 305.1; 890.5 → 567.3; 891.5 → 568.3

Column: Zorbax XDB Eclipse 150 x 2.1 mm; 3.5µ

Eluents:

- **A:** 950 mL water, 50 mL ACN, 10mmol ammonium formate brought to pH 4 with formic acid;
- **B:** 920 mL ACN and 80 mL water, 10 mmol ammonium formate (should be solved in water before diluting with ACN).

Gradient: The gradient starts with 30% B and goes to 100% B.

Flow: 0.3 ml/min

Injection volume: 10 µl

Notes:

High source temperature may reduce signals (better set 300 °C or below)

With the ammonium adduct being used as the mother ion for the MRM-transition the buffer concentration, as well as the pH, are of high importance.

Performance:

Validation data: see www.crl-pesticides-datapool.eu:

Pesticide names: Avermectin B1a, Avermectin B1b and Avermectin B1a, 8,9-Z

LOQ: 0,005 mg/kg for Avermectin B1a and B1b (using the instrument above)