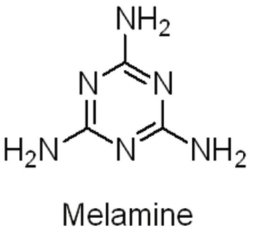
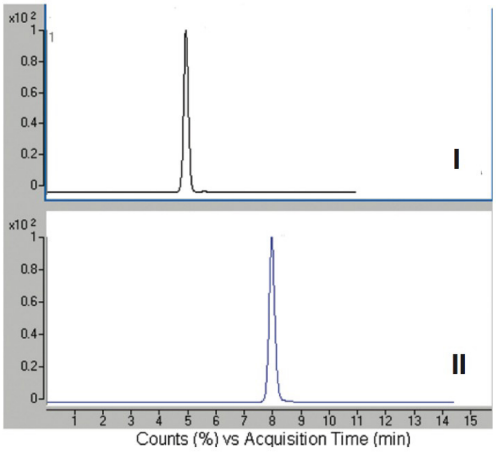
Melamine at Trace Levels

LC-MS method for analysis of trace levels of melamine



Melamine



Counts (%) vs Acquisition Time (min)

Notes: Several dogs and cats died or were seriously ill after consumption of pet foods which had been manufactured with adulterated wheat glutens. After testing of the wheat glutens it was determined that they contained significant levels of melamine and/or several related compounds. There is a need for an accurate and simple analytical method for health hazard evaluation of melamine, especially after traces of this compound were found in baby food as well.

Method Conditions

Column: **Cogent Diamond Hydride™**, 4µm, 100Å

Catalog No.: 70000-15P-2

Dimensions: 2.1 x 150 mm

Solvents: A: DI H_2O/ 0.1% formic acid
B: Acetonitrile/ 0.1% formic acid

Mobile Phase: I: 60%B, isocratic
II: 70%B, isocratic

Injection vol.: 5µL

Flow rate: 0.4 mL/min

Detection: ESI – pos - Agilent 6210 MSD TOF MS

Sample: 166.7µg /mL of compound in 50% acetonitrile/ DI H_2O/ 0.1% acetic acid. Run 1:1000 dilution in 80% acetonitrile/ DI H_2O/ 0.1% acetic acid

Peaks: 1. Melamine m/z 127 $(M+H)^+$

t_0: 1.44 min

Discussion

In this application, melamine was analyzed under ANP conditions using a Cogent Diamond Hydride column. A high percentage of acetonitrile used in the mobile phase shows an increased sensitivity for the analyzed compound. The method is suitable for detection of melamine at trace levels. The unique chemical properties of melamine (base functionalities, causing the predominant form of the compound to be pH dependent) present challenges in obtaining retention and adequate sensitivity, when using LC-MS on standard HPLC columns.

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