Product information

YMC EUROPE GMBH

YMC UltraHT Hydrosphere C18 Melamine LC/MS

Melamine in pet-food

Analytic - 110 - 26
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Melamine (sometimes confused with the plant and animal compound, melanine or another compound, melanin) is an industrial chemical used in the manufacture of plastic products. Despite that, tests showed that a number of milk companies have used it in processing milk to artificially increase the apparent protein content by addition of non-protein nitrogen and so allowing illegal dilution of the product with water with a corresponding increase in sales value.

The problem is that melamine forms crystals of melamine cyanurate from aqueous solutions when mixed with cyanuric acid (which forms naturally by hydrolysis of melamine). These low solubility, virtually indigestible crystals concentrate in the renal microtubules and form large numbers of round spoke-like, yellow crystals, damage the renal cells and ultimately kidney failure.

Recently, more and more attention has been focussed on melamine in milk and food products (including, for example, chocolate). The most distressing incident occurred in the summer of 2008 when more than 54,000 babies became seriously ill and four died in China due to suspected milk formula. However, earlier in 2007 the FDA reported that an estimated 8,500 cats and dogs died after eating melamine-contaminated pet food.

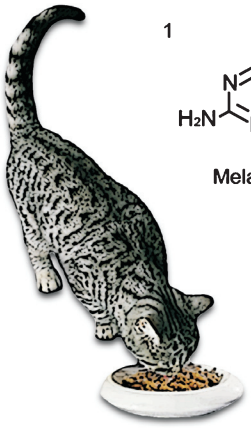
In order to avoid further accidents involving melamine contamination, it is essential to provide an analytical method, which monitors the level of melamine without compromising resolution due to excessive background signals from the sample matrix.

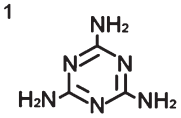
YMC have developed an ultra-fast HPLC method which also can be transferred to LC/MS detection and a 2 µm stationary phase designed to analyse polar compounds, YMC-UltraHT Hydrosphere C18.

Analytical Method:

Sample preparation method

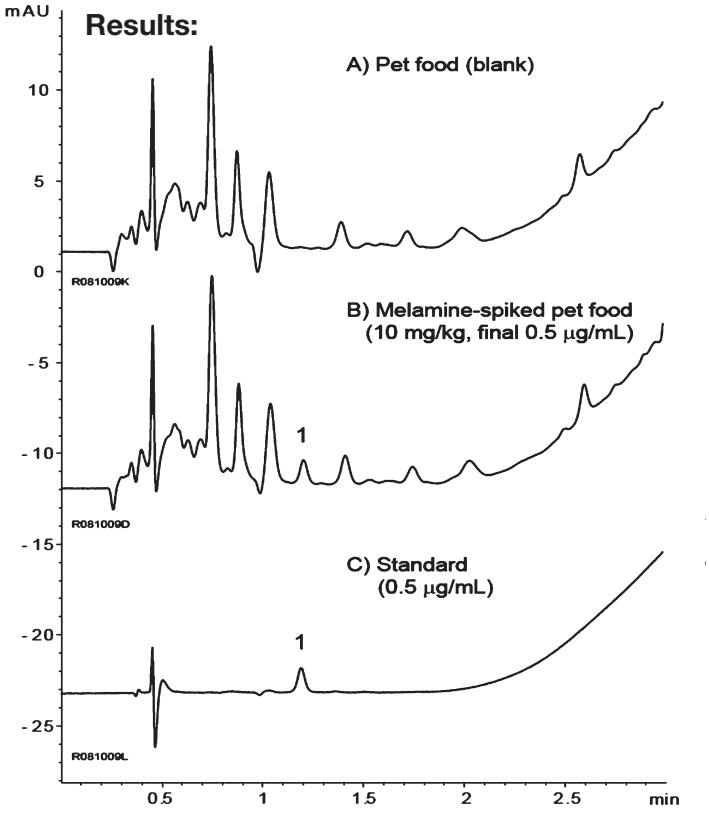
Pet food (1 g)
← 50% aqueous acetonitrile (5 mL)
Sonication for 30min
Centrifugation at 10000 rpm for 10 min
Filtration
Dilution 4 times with eluent A
Filtration
Injection





Melamine

Results:



Column:	YMC-UltraHT Hydrosphere C18 (2 µm, 12 nm) 50 x 2.0 mm ID	Flow rate:	0.4 ml/min
Eluent:	A) water / heptafluorobutyric acid (100/0.1)	Temperature:	40°C
	B) methanol / heptafluorobutyric acid (100/0.1)	Detection:	UV at 240 nm
	5% B (0-0.17 min), 5-90% B (0.17-3 min)	Injection:	1 µl

This method has been successfully developed using 2 µm Hydrosphere C18. The application allows analysis of complex matrices in less than 2.5 minutes. The peak of interest for melamine shows baseline separation from other components, allowing easy, fast quantification of trace contamination.