

Analysis of Bisphenol A and Bisphenol F Using the Hitachi LaChromUltra® HPLC System with MS Detection

Bisphenol A and Bisphenol F, abbreviated as BPA and BPF, respectively, are small phenolic molecules used to make many types of plastic, including the polycarbonates and epoxy resins used in food storage materials. Although BPA and BPF has many useful functions, they have also been found to affect a variety of systems within the human body. As such, many governments have instituted limits on the use of BPA in food and beverage containers, and especially in products for children.

Due to both the prevalence of BPA and BPF and the health concerns associated with them, it is important to have analytical means to test for the presence of BPA and BPF. Described here is a method for the rapid analysis of materials for BPA and BPF using the Hitachi LaChromUltra® HPLC system with MS detection. The data here specifically describe the analysis of food packaging material for BPA and BPF within 5 minutes using LC-MS.

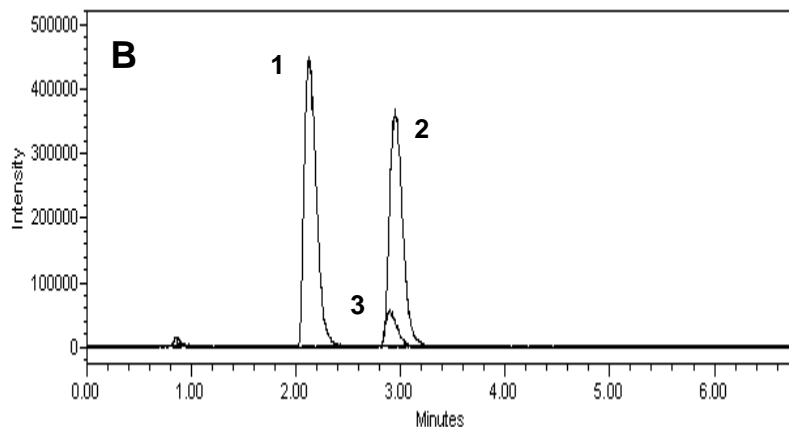
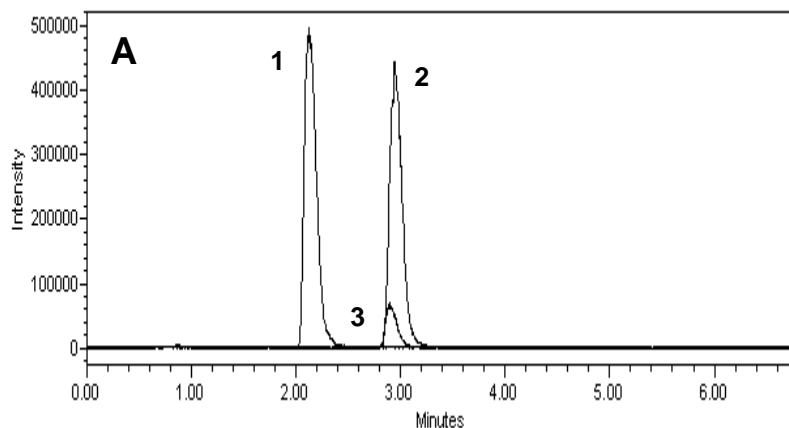
Experimental Conditions

Module	Conditions
Pump (L-2160U)	Mobile Phase: 50% H ₂ O:50% CH ₃ CN Flow Rate: 0.4 mL/min
Autosampler (L-2200U)	Injection Volume: 5 µL
Oven (L-2300)	Temperature: 25 °C
Detector (TQD)	Ionization: ES-, SIR values of 228, 200, and 234
Column	Atlantis® T3 3µm, 2.1 x 150 mm
Internal Standard	<i>d</i> ₆ -Bisphenol A

Detector Settings

Analyte	Cone Voltage, V	SIR, Da
BPA	30	227
BPF	30	199
<i>d</i> ₆ -BPA (IS)	30	233

Results– A) Chromatograph of Standards 1) 100 µM BFA, 2) 100 µM BPA, 3) 12.5 µM *d*₆-BPA B) Spiked Chromatograph of Food Packaging Material



Results- BPA Reproducibility and Linearity

Retention Time Reproducibility (N=7)	RSD = 0.4%
Peak Area Reproducibility (N=7)	RSD = 1.9%
Linearity (10-150 µM, BPA and BPF)	R ² = 0.9937-0.9991

Discussion

Hitachi's LaChromUltra® liquid chromatography system with mass spectrometry detection is extremely effective at analysis of BPA and BPF in under 5 minutes.

Hitachi High Technologies America, Inc.

Life Sciences Division
 5100 Franklin Drive
 Pleasanton, CA 94588
 Toll Free: (800) 548-9001

Website: www.hitachi-hta.com/ultra Email: Sales-LS@hitachi-hta.com