

Analysis of Parabens Using the Hitachi Chromaster HPLC System with Diode Array Detection

Parabens, or para- alkyl hydroxybenzoates, are commonly used as preservatives in items such as shampoos, moisturizers, and foods due to their anti-microbial and anti-fungal properties. However, these compounds may also act as carcinogens, estrogen mimics, or react with UV light to produce carcinogenic materials. Due to the wide-spread use of these compounds in many commonly used products, coupled with the unknown health risks posed by their use, it is important to be able to accurately analyze materials for paraben content. Presented here is a method for analysis of several parabens in hand cream. This method uses the Hitachi Chromaster HPLC system with diode array detection to analyze the paraben content of hand cream within 25 minutes.

Experimental Conditions

Module	Conditions
Pump (5110)	Mobile Phase: CH ₃ CN: 0.1% H ₃ PO ₄ , 35:65 (v/v) Flow Rate: 1.0 mL/min
Autosampler (5210)	Injection Volume: 10 µL
Oven (5310)	Temperature: 40 °C
Detector (5430)	DAD, 220 nm and 254 nm
Column	Hitachi LaChrom C18, 5 µm, 4.6 x 150 mm

Results – Linearity (0.1 – 50 mg/L)

2-phenoxyethanol	R ² = 0.9996
Methyl- <i>p</i> -hydroxybenzoate	R ² = 0.9996

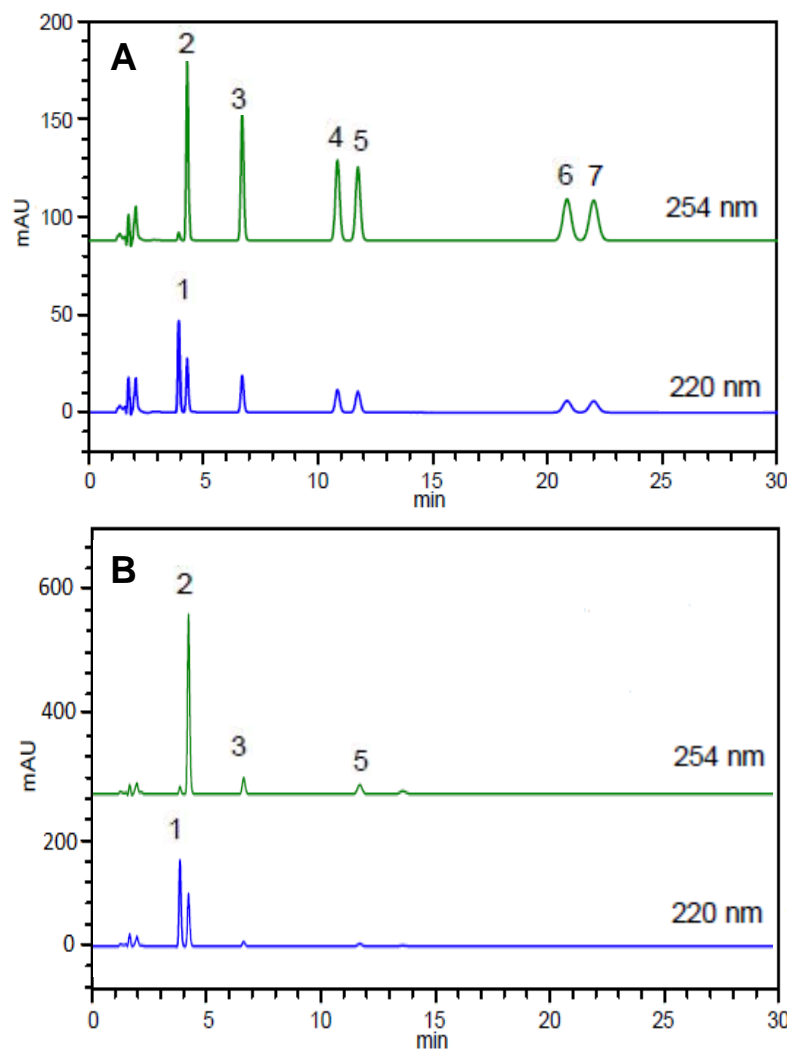
Reference:

1 –Technical Data LC110001, Hitachi High Technologies Corporation.

Results – Chromatographs

A. Standard Mix: 1) 2-phenoxyethanol, 2) methyl-*p*-hydroxybenzoate, 3) ethyl-*p*-hydroxybenzoate, 4) isopropyl-*p*-hydroxybenzoate, 5) propyl-*p*-hydroxybenzoate, 6) isobutyl-*p*-hydroxybenzoate, 7) butyl-*p*-hydroxybenzoate

B. Hand Cream: 0.1 g/10 mL CH₃OH



Discussion

Hitachi's Chromaster liquid chromatography system with DAD detection is extremely effective at simultaneous analysis of multiple parabens in under 25 minutes.

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