

Analysis of Aromatic Amines in Hair Dyes Using the Hitachi LaChromUltra® U-HPLC System with DAD Detection

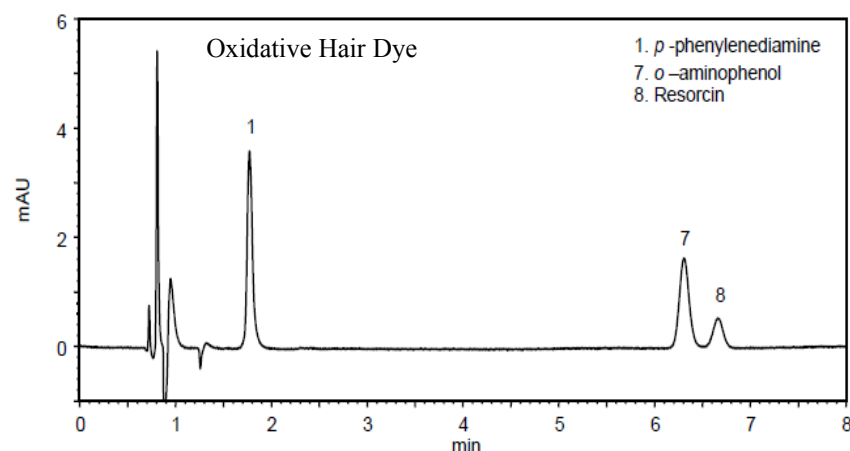
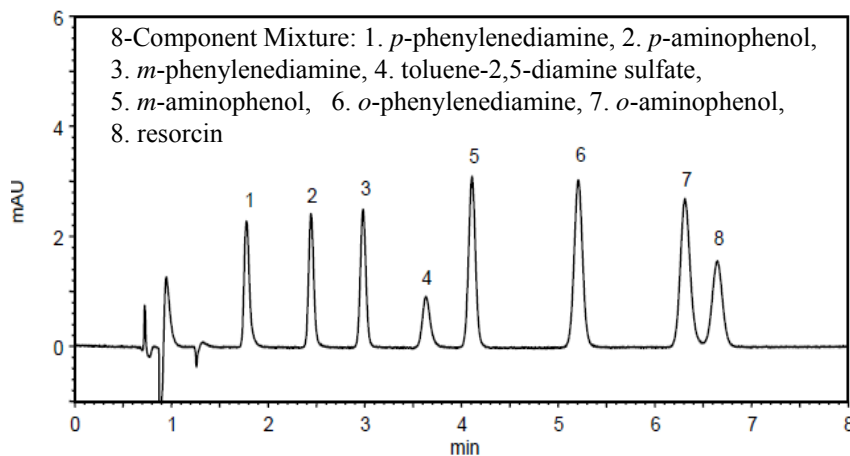
Hitachi High Technologies America, Inc.

Aromatic amines are common components in oxidative hair dyes but are also suspected carcinogens. As such, analysis of these components is essential. Here we describe a method for rapid analysis of aromatic amines in oxidative hair dyes using ultra high-speed liquid chromatography and diode array detection in under seven minutes. The hydrophilic analytes are separated by reverse phase chromatography using the Hitachi C18-AQ column for optimal selectivity, detected by UV absorbance at 280 nm, and identified by diode array spectral confirmation¹.

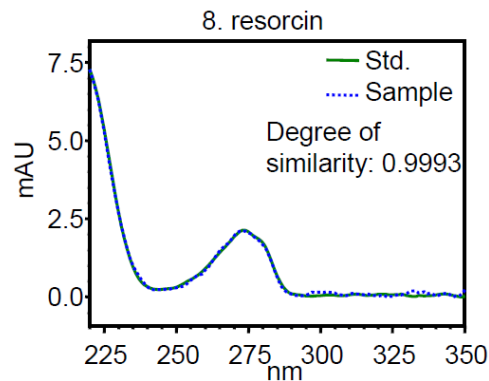
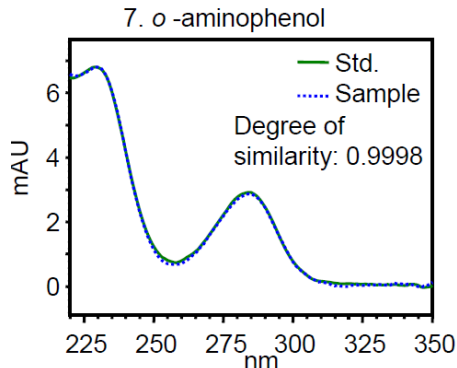
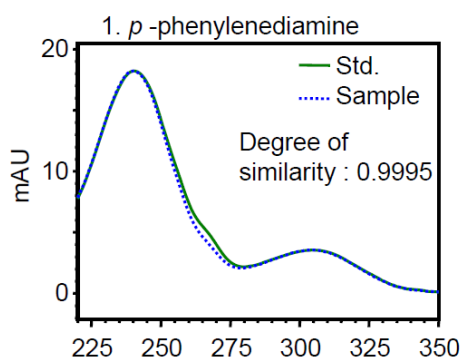
Experimental Conditions

Module	Conditions
Pump (L-2160U)	Mobile Phase: 50 mM NH ₄ H ₂ PO ₄ /(NH ₄) ₂ HPO ₄ (pH 6.8)/CH ₃ OH (95/5) Flow Rate: 0.65 mL/min
Autosampler (L-2200U)	Injection Volume: 2 µL
Oven (L-2300)	Temperature: 25 °C
Detector (L-2455U)	DAD 280 nm
Column	Hitachi C18-AQ, 2 µm, 3.0 x 100 mm
Standard	Mixture of 8 aromatic amines

Results – Chromatograms of 8-Component Mixture and Oxidative Hair Dye



Results - UV Spectral Comparison of Standards and Hair Dye Components



Discussion

Hitachi's LaChromUltra® liquid chromatography system is extremely effective at rapid analysis and identification of aromatic amines in hair dyes. The C18-AQ reversed phase column provides the necessary selectivity for separating the hydrophilic analytes.

Reference:

1 – Technical Data LCU090028, Hitachi High Technologies Corporation.

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