

Rapid Analysis of Chlorogenic Acid Using the Hitachi LaChromUltra® High Speed Liquid Chromatography System

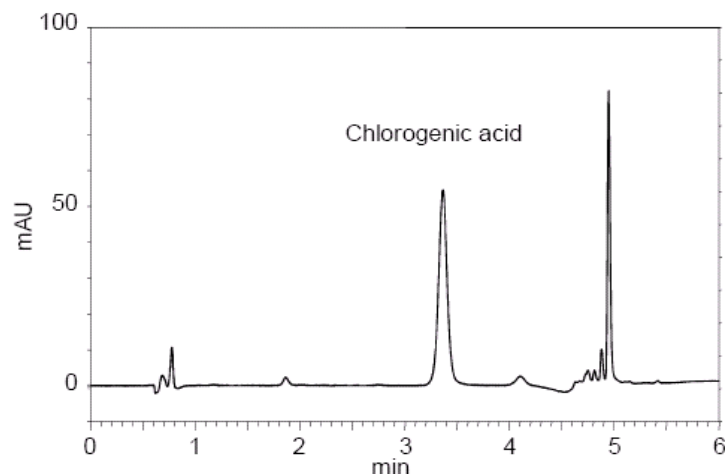
Hitachi High Technologies America, Inc.

Chlorogenic acid is a well-known polyphenol in coffee. It is also one of the active ingredients of the Chinese herbal medicine, Flos Lonicerae Japonicae (dried bud of the Japanese honeysuckle), which exhibits anti-inflammatory and antibacterial properties. Here we describe a methodology for the rapid analysis of chlorogenic acid using the highly flexible Hitachi LaChromUltra® U-HPLC system via reversed phase separation and ultraviolet detection. The data here specifically describes the analysis of a coffee drink in addition to the Flos Lonicerae Japonicae extract according to Chinese Pharmacopeia.¹

Experimental Conditions

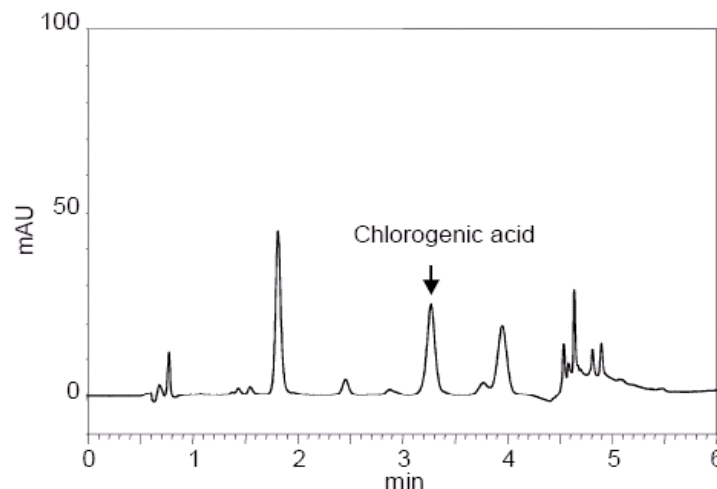
Module	Conditions
Pump (L-2160U)	Mobile Phase A: CH ₃ CN Mobile Phase B: 10 mM KH ₂ PO ₄ (pH 3.0) Flow Rate: 0.30 mL/min
Autosampler (L-2200U)	Injection Volume: 1 µL
Oven (L-2300)	Temperature: 25 °C
Detector (L-2400U)	Wavelength: 327 nm
Column	Hitachi LaChromUltra C18; 2.0 µm; 2.0x75 mm

Results – Chromatogram of Flos Lonicerae extract and sample preparation procedure

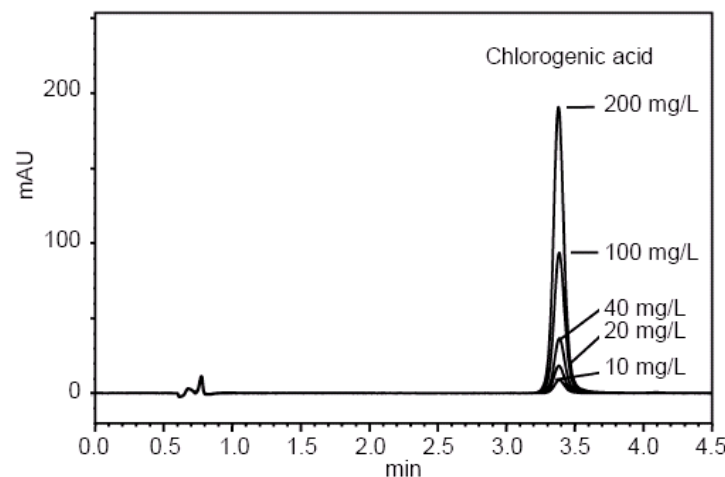


1. Add 50 mL of 50% methanol to 50 mg Flos Lonicerae, and weigh.
2. Sonicate for 30 minutes while shaking occasionally.
3. Weigh again. Add 50% methanol to compensate for decreased volume.
4. Mix well. Filter with 0.2 µm filter.
5. Extract 5 mL of filtrate. Dilute 50% methanol to a volume of 25 mL.

Results – Chromatogram of coffee drink



Results – Overlaid chromatograms of chlorogenic acid standards at varying concentrations



Discussion

Hitachi's LaChromUltra® liquid chromatography system is extremely effective at rapid analysis of chlorogenic acid in a variety of samples. It is well separated from other components in the matrices for high resolution analysis over a broad concentration range.

References:

1 – Technical Data 97, Hitachi High Technologies Corporation.

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