

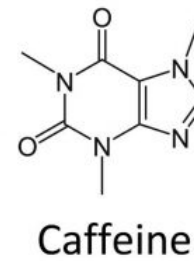
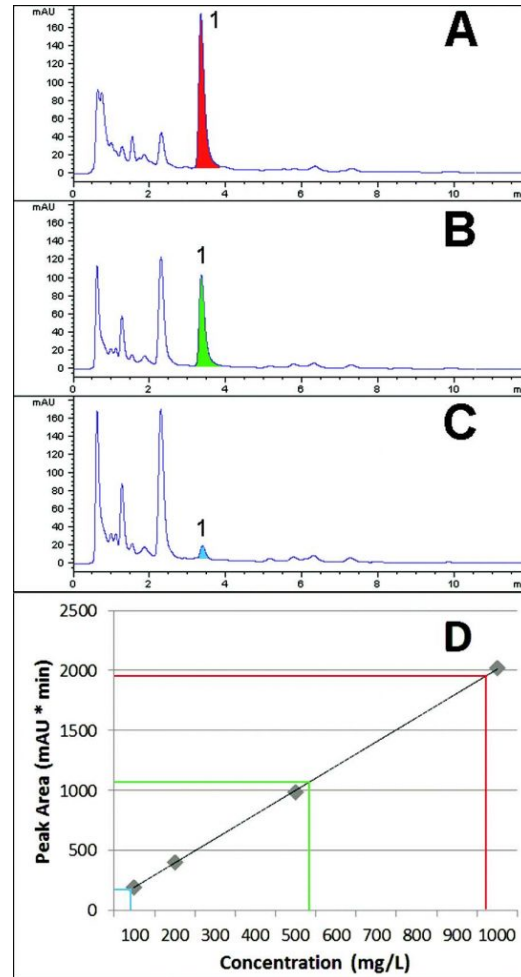


Caffeine Content in Coffee Analyzed with HPLC - AppNote

Espresso, Regular, and De-Caffeinated Coffee Caffeine Content

Caffeine is separated from other matrix components in three common Coffee beverages in this AppNote. A shot of Espresso (*Figure A*) had the highest content, followed by regular drip Coffee (*Figure B*) as expected. In De-Caffeinated Coffee, Caffeine is extracted from the coffee beans but even after numerous extractions, Caffeine is not completely removed. This is illustrated by the chromatogram for the De-Caffeinated Coffee sample (*Figure C*), where a Caffeine peak was detected.

A calibration curve was constructed in the range of 100 - 1000mg / L (*Figure D*), which provided estimates of caffeine content in the Beverages: Espresso: 964mg / L, Regular Coffee: 539mg / L, and Decaf Coffee: 85mg / L.





Peak:
Caffeine

Method Conditions

Column: Cogent Bidentate C18 2.0™, 2.2µm, 120Å

Catalog No.: 40218-05P-2

Dimensions: 2.1 x 50mm

Mobile Phase: 90:10 A: DI Water with 0.1% Formic Acid (v/v), / B: Acetonitrile with 0.1% Formic Acid (v/v)

Injection vol.: 0.5µL

Flow rate: 0.3mL / minute

Detection: UV @ 254nm

Sample Preparation: Espresso, Regular, and Decaf Coffee were purchased from a local coffeehouse. The samples were filtered with 0.45µm Nylon Syringe Filters (*MicroSolv Tech Corp.*). A 1000ppm Caffeine reference standard solution was prepared in a diluent of 50:50 Solvent A / Solvent B. Dilutions were made from this Stock Solution to obtain concentrations of 100, 200, and 500ppm.

t₀: 0.8 minutes

Note: Caffeine is a xanthine alkaloid found in the coffee plant, the tea bush, the kola nut, and other plants. It is the most commonly consumed psychoactive drug in the world.

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