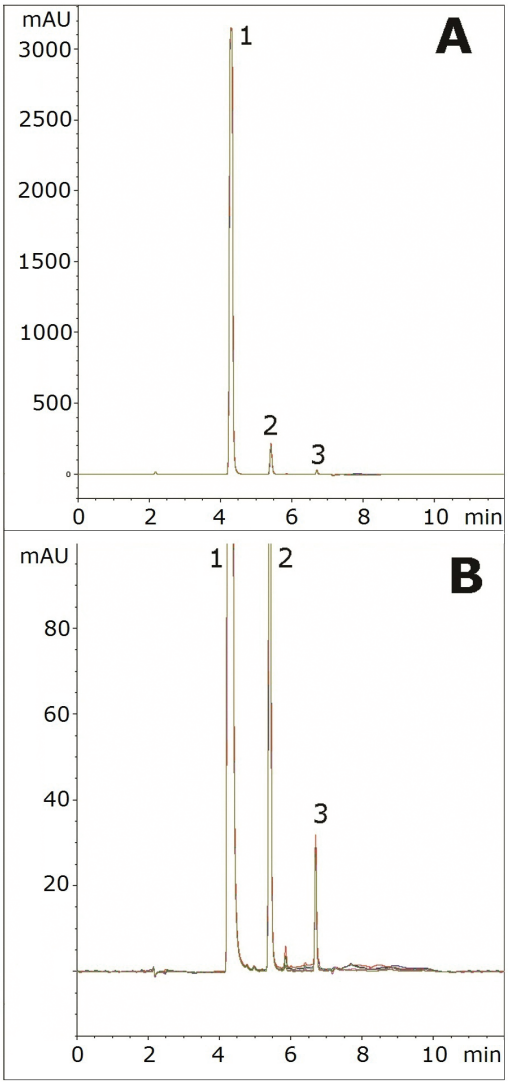
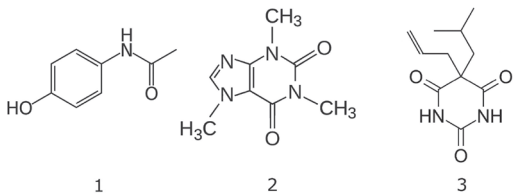
# Fioricet®/Esgic®

## Gradient separation of acetaminophen, caffeine, and butalbital

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**Note:** Fioricet/Esgic is a combination of acetaminophen, caffeine, and butalbital. It is used to treat tension headaches, muscle contraction headaches, and migraines.

## Method Conditions

**Column: Cogent Bidentate C18™**, 4µm, 100Å

**Catalog No.:** 40018-15P

**Dimensions:** 4.6 x 150 mm

**Solvents:** A: DI $H_2O$ / 0.1% formic acid
B: 97% acetonitrile / 3% DI $H_2O$ / 0.1% formic acid

**Gradient:**

| time (min.) | %B |
|---|---|
| 0 | 10 |
| 6 | 70 |
| 7 | 10 |

**Temperature:** 35˚C

**Injection vol.:** 10µL

**Flow rate:** 0.8 mL/min

**Detection:** UV 240 nm

**Sample: Stock Solution:** Fioricet tablet was ground, added to 10 mL volumetric flask and diluted with 50/50 Solvent A/Solvent B mixture. The flask was vortexed 5 min and a portion of the solution was filtered with a 0.45µm nylon syringe filter.
**Working Solution:** 10µL of the stock was diluted with 990µL of 50/50 Solvent A / Solvent B mixture.

**Peaks:** 1. Acetaminophen
2. Caffeine
3. Butalbital

**$t_0$:** 2.2 min

## Discussion

The method shown uses a Cogent Bidentate C18 column with a simple reversed phase gradient to separate the three components of a Fioricet tablet. Figure A shows the five-run overlay obtained from the gradient. Figure B shows a "zoomed in view" so that the butalbital peak can be seen clearly.



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