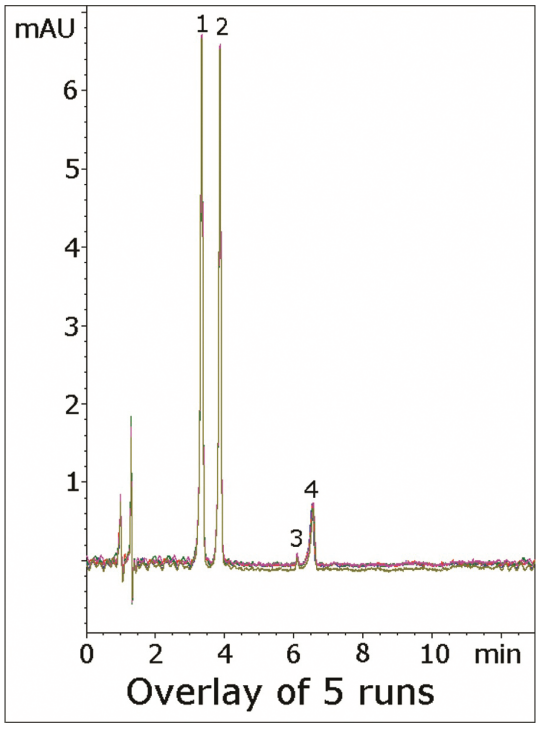
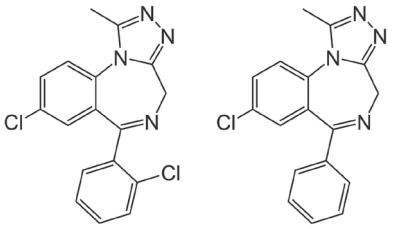
# Alprazolam (Xanax®)

## Robust separation of API from USP internal standard




Peak 1 Peak 2

**Note:** Alprazolam is a member of the benzodiazepine class of compounds, prescribed to treat a variety of anxiety-related conditions.

## Method Conditions

**Column: Cogent Diamond Hydride™**, 4µm, 100Å

**Catalog No.:** 70000-7.5P

**Dimensions:** 4.6 x 75 mm

**Solvent:** A: DI $H_2O$ / 0.1% formic acid (v/v)
B: Acetonitrile / 0.1% formic acid (v/v)

**Gradient:**

| time (min.) | %B |
|---|---|
| 0 | 95 |
| 1 | 95 |
| 6 | 50 |
| 7 | 95 |

**Post Time:** 3 min

**Injection vol.:** 1µL

**Flow rate:** 1.0 mL/min

**Detection:** 254 nm

**Samples: Tablet:** A 0.25mg strength generic Xanax® tablet was ground and added to a 10 mL volumetric flask. After diluting with 50% solvent A/50% solvent B, it was sonicated for 10 min. A portion was filtered with a 0.45µm nylon syringe filter (MicroSolv Tech Corp.).
**Internal Standard:** 1mg/mL triazolam in methanol diluent.
**Working Solutions:** 20µL of the internal standard and 980µL of the tablet extract were mixed. Peak identities were confirmed by individual solutions of the tablet extract and the internal standard.

**Peaks:** 1. Triazolam (internal standard)
2. Alprazolam (API)
3, 4. Impurities

**$t_0$:** 0.9 min

## Discussion

The USP assay method for alprazolam uses a bare silica column and a complex mobile phase consisting of acetonitrile, chloroform, butyl alcohol, and acetic acid. In this method, a simple LC-MS compatible mobile phase is used and produces excellent peak shapes for both the API and its USP internal standard.

Furthermore, a resolution of 4.3 was obtained between the two peaks, which meets the USP system suitability of $R_S \geq 2.0$. Two impurity peaks are also observed, which further illustrates the resolution capabilities of the column.This method illustrates how the MS-compatible HPLC-UV methods described in various application notes can be successfully adapted for LC-MS.

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