

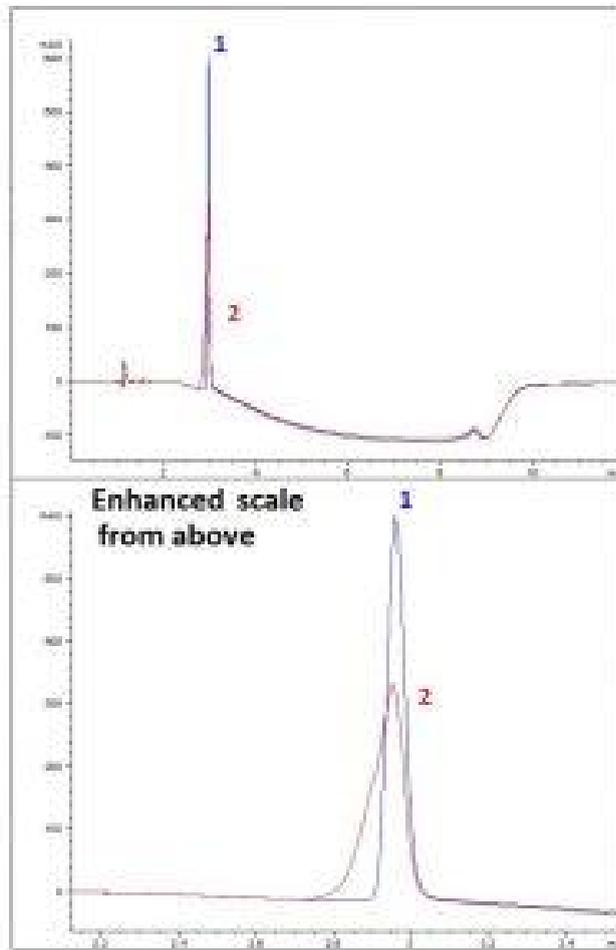
## Lidocaine and Aminoethylamide Analysis of a Local Anesthetic - AppNote

### Method Development for a Local Anesthetic (*A Case Study*)

An analyst was using a Cogent Diamond Hydride™ column for evaluating Lidocaine methods and although they had good retention of the compound, they did not meet the required 0.3 – 0.5 AU when 0.1 mg/mL Lidocaine sample was injected for both 2 $\mu$ L and 10 $\mu$ L injection volumes. In order to increase peak height, they prepared 0.5 mg/mL Lidocaine sample. When this sample was injected, peak distortion was observed. Altering the diluent from 100% DI Water to 80:20 Acetonitrile/ DI Water, the peak distortion was refined. By changing the gradient profile, we were able increase peak height for 0.1 mg/mL Lidocaine sample nearly 2-fold, achieving the required limit of detection.

The Cogent Diamond Hydride™ column has provided a rapid, sensitive, and reproducible method for analysis of this drug. The presented data (overlay of 5 injections) demonstrates how the compound can be effectively retained using Aqueous Normal Phase ANP-HPLC with both excellent peak shape, run-to-run repeatability, and great sensitivity using a simple gradient in ANP HPLC. If longer analysis time is required, this can be achieved by a simple change in gradient profile.

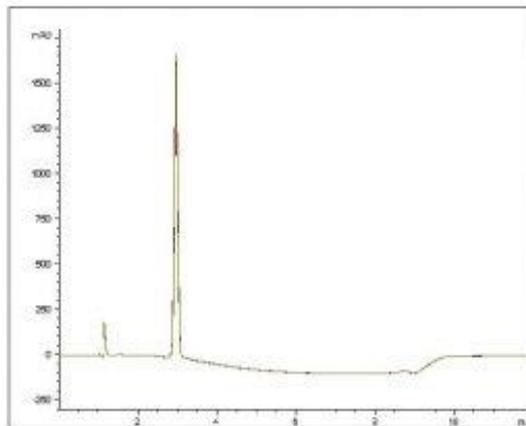
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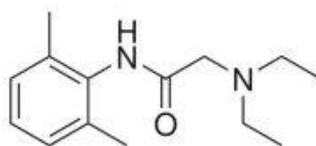
**PEAKS:**

1. Lidocaine\* Solution 2. Lidocaine\* Solution

2



Five overlaid 10µL injections



Lidocaine

## Method Conditions

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

**Catalog No.:** 70000-75P

**Dimensions:** 4.6 x 75 mm

### Mobile Phase:

A: DI water / 0.1% TFA (v/v)

B: acetonitrile / 0.1%TFA (v/v)

### Gradient:

Time (Minutes)	%B
0	95
5	10
6	10
7.2	95
10	95

**Injection vol.:** 2 µL, 10 µL

**Flow rate:** 0.8 mL / minute

**Detection:** UV @ 220 nm

### Sample Preparation:

1. 0.5 mg / mL Lidocaine\* solution in (80:20) acetonitrile / DI water
2. 0.5 mg / mL Lidocaine\* solution in DI water

\* Lidocaine sample was prepared from 1% Lidocaine HCl injection, USP 200 mg / 20 mL (10 mg / mL, Lot: 92-073-DK, exp: 8/1/2020.) Each mL contains Lidocaine Hydrochloride anhydrous, 10 mg: Sodium Chloride 7mg: Methyl Paraben 1 mg, pH: 6.5, Hospira Inc. Lake Forrest, IL USA.

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**Notes:** Lidocaine is a local anesthetic, which causes the absence of pain sensation. It works by altering the signal conduction in neurons by prolonging the inactivation of the fast voltage-gated Na<sup>+</sup> channels in the neuronal cell membrane. This action is responsible for potential transmission and with adequate blockage, these voltage-gated sodium channels will not open and an action potential will not be generated. Lidocaine is often added to cocaine as a diluent as both drugs will numb gums when applied, it gives the user an impression of high-quality cocaine- when in fact, the user is receiving a diluted product.

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