

# Avoiding Ghost Peaks in HPLC Analysis Using a Ghost Hunter Column

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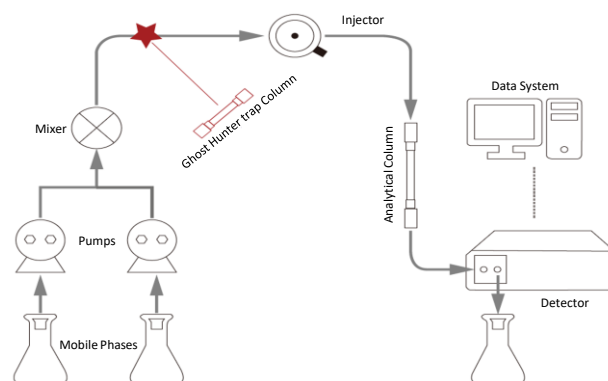
## Overview

In the process of liquid chromatography ghost peaks often interfere with the separation or quantification of drug analysis. These ghost peaks are usually introduced by impurities in the mobile phase, salts from a buffer solution, or acids and bases. Troubleshooting ghost peaks is both time and labor consuming.

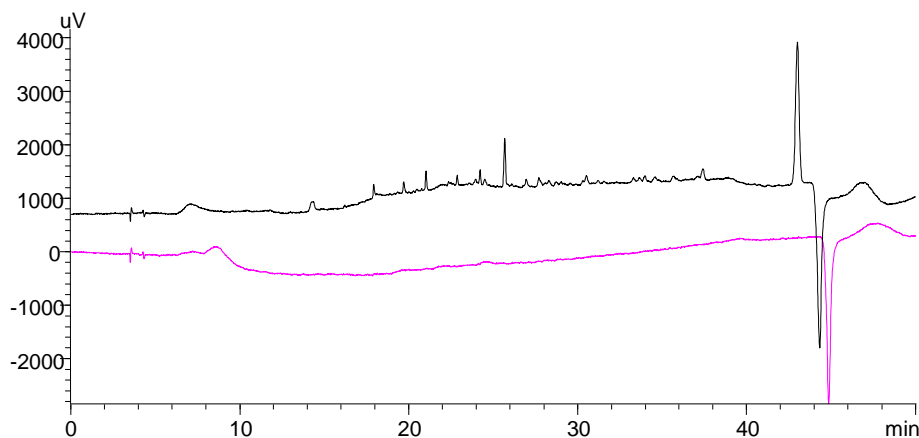
Ghost Hunter, a ghost peak trap column, is designed to deal with this challenge by effectively removing ghost peaks. The Ghost Hunter column is stable in most organic solvents and aqueous buffers over a wide pH range. It has a unique adsorption material with a special structure and high surface activity that effectively absorbs a variety of nonpolar and polar organic impurities. Use of Ghost Hunter column helps in reducing the appearance of ghost peaks and extend the column and instrument lifetime.

In this application note, several experiments were conducted with different mobile phases to evaluate the effect of using the Ghost Hunter column. In each case, ghost peaks that were present without the trap column were removed when the trap column was added. There also was no impact on the retention time of analytes that were tested. However, there might be variation in the retention times and peak shapes for methods employing mobile phase additives or modifiers, like ion pair reagents.

**Figure 1.** Ghost Hunter Trap Column is Installed after the Liquid Mobile Phase Mixer.



**Figure 2.** Comparison of the Blanks Without (Black) and With (Pink) the Ghost Hunter Trap Column



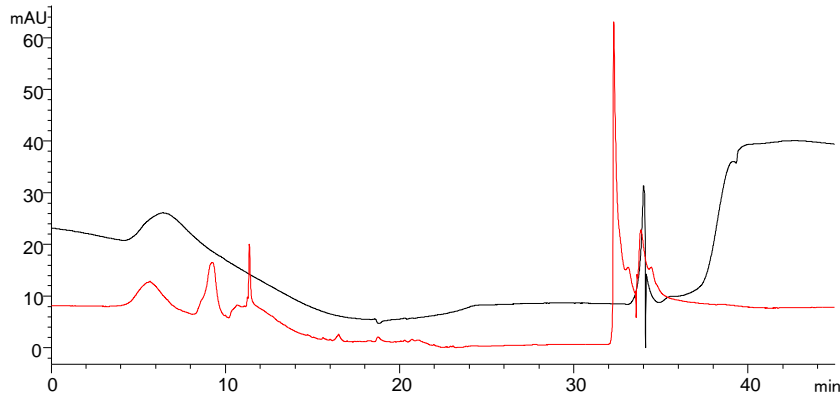
**Column:** Venusil® 5 µm C18 Plus  
**Dimensions:** 250 x 4.6 mm  
**Part No.:** VPS952005-A  
**Trap Column:** Ghost Hunter  
**Dimensions:** 4.6 x 50 mm  
**Trap Column Part No.:** GHC0505-0  
**Mobile Phase:** A: 20 mM Ammonium Acetate, adjusted to pH 4.0 with Acetic Acid  
 B: Acetonitrile  
**Gradient:**

Time (min)	%B
0	5
10	20
20	60
35	80
40	80
41	95
55	5

**Flow Rate:** 1 mL/min  
**Injection Volume:** 0 µL (Blank)  
**Temperature:** 30 °C  
**Detection:** UV @ 280 nm



**Figure 3.** Comparison of the Blanks Without (Red) and With (Black) the Ghost Hunter Trap Column

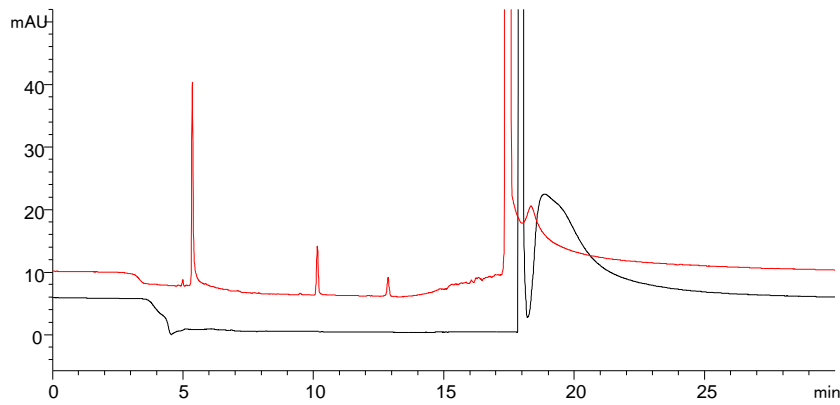


**Column:** Venusil® 5 µm XBP C18  
**Dimensions:** 250 x 4.6 mm  
**Part No.:** VX952505-0  
**Trap Column:** Ghost Hunter  
**Dimensions:** 4.6 x 50 mm  
**Trap Column Part No.:** GHC0505-0  
**Mobile Phase:** A: Water  
 B: Acetonitrile  
**Gradient:**

Time (min)	%B
0	10
10	90
30	90
30.1	10
45	10

**Flow Rate:** 1 mL/min  
**Injection Volume:** 0 µL (Blank)  
**Temperature:** 30 °C  
**Detection:** UV @ 210 nm

**Figure 4.** Comparison of the Blanks Without (Red) and With (Black) the Ghost Hunter Trap Column

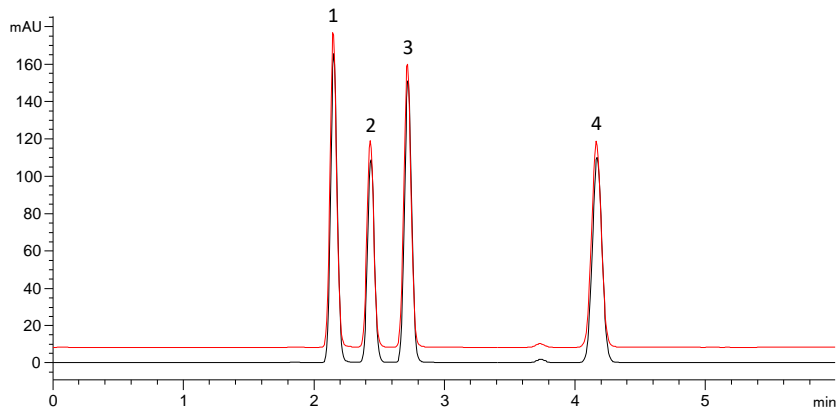


**Column:** Venusil 5 µm XBP C18  
**Dimensions:** 250 x 4.6 mm  
**Part No.:** VX952505-0  
**Trap Column:** Ghost Hunter  
**Dimensions:** 4.6 x 50 mm  
**Trap Column Part No.:** GHC0505-0  
**Mobile Phase:** A: 5 mM Sodium Dihydrogen Phosphate, pH 4.3  
 B: Acetonitrile  
**Gradient:**

Time (min)	%B
0	5
5	60
10	80
15	80
15.1	5
30	5

**Flow Rate:** 1 mL/min  
**Injection Volume:** 0 µL (Blank)  
**Temperature:** 30 °C  
**Detection:** UV @ 280 nm

**Figure 5.** Comparison of the Blanks Without (Red) and With (Black) the Ghost Hunter Trap Column



**Column:** Venusil 5 µm XBP C18  
**Dimensions:** 250 x 4.6 mm  
**Part No.:** VX952505-0  
**Trap Column:** Ghost Hunter  
**Dimensions:** 4.6 x 50 mm  
**Trap Column Part No.:** GHC0505-0  
**Mobile Phase:** Methanol / Water (85:15, v/v)  
**Flow Rate:** 0.8 mL/min  
**Injection Volume:** 1 µL (CQA Standard)  
**Temperature:** 30 °C  
**Detection:** UV @ 254 nm  
**Analytes:**

1. Uracil, 100 ppm
2. Phenol, 100 ppm
3. Nirobenzene, 100 ppm
4. Maphthalene, 300 ppm



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