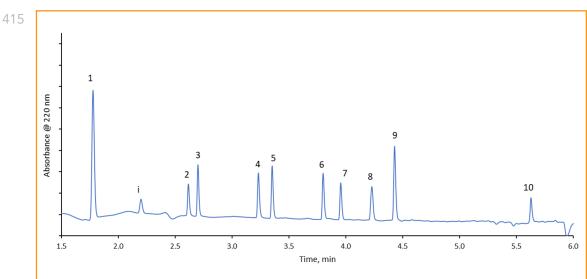


PHARMACEUTICALS



Beta Blockers on 2µm HALO® PCS C18



PEAK IDENTITIES:

- 1. Atenolol
- 2. Pindolol
- 3. Nadolol
- 4. Metoprolol
- 5. Acebutolol
- 6. Oxprenolol
- 7. Bisoprolol
- 8. Labetalol
- 9. Propranolol
- 10. Carvedilol
- i = impurity in bisoprolol

TEST CONDITIONS:

Column: HALO 90Å PCS C18, 2.0 μm, 2.1 x 150 mm

Part Number: 91882-717

Mobile Phase A: Water, 0.1% Formic Acid Mobile Phase B: Acetonitrile, 0.1% Formic Acid

Gradient Separation: Time: %B

0.00 3 5.00 36 6.50 100 7.50 100 8.00 3 12.00 3 Flow Rate: 0.4 mL/min. Back Pressure: 599 bar Temperature: 30 °C Injection: 2.0 µL

Sample Solvent: 93/7 Water/ACN Wavelength: PDA, 220 nm

Flow Cell: 1 µL Data Rate: 40 Hz

Response Time: 0.1 sec.

LC System: Shimadzu Nexera X2

Beta blockers are widely prescribed to treat or prevent cardiovascular conditions such as arrhythmias, heart attacks, and hypertension. Using a $2 \mu m$ HALO® PCS C18 column with UV detection and an MS-compatible mobile phase, ten different beta blockers are cleanly separated in under 6 minutes. The 150 mm column delivers sharp resolution and rapid elution of all peaks, ensuring efficient analysis in a short run time.



