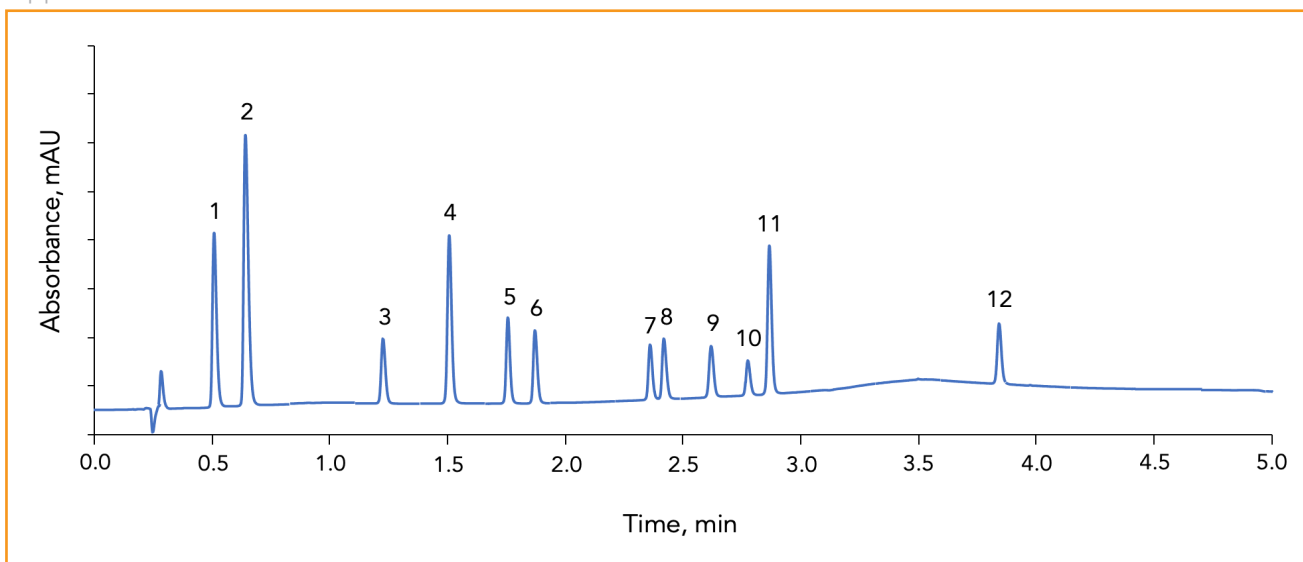




## Separation of Beta Blockers on HALO Biphenyl, 2.0 µm

Application Note 195-B



A mixture of twelve beta blockers is separated on a HALO® 2.0 µm Biphenyl column with excellent speed and resolution. Beta blockers are mainly used to treat irregular heart beats or complications with the heart such as heart attacks. Beta blockers are also known to help treat high blood pressure.

### TEST CONDITIONS:

**Column:** HALO 90 Å Biphenyl, 2.0 µm, 2.1 x 50 mm

**Part Number:** 91812-411

#### Mobile Phase:

A: Water, 0.1% TFA

B: Acetonitrile, 0.05% TFA

**Gradient:**

Time (min)	% B
0.0	10
5.0	50

**Flow Rate:** 0.5 mL/min

**Initial Pressure:** 272 bar

**Temperature:** 35 °C

**Detection:** UV 220 nm, PDA

**Injection Volume:** 1.0 µL

**Sample Solvent:** Water

**Response Time:** 0.025 sec

**Data Rate:** 40 Hz

**Flow Cell:** 1.0 µL

**LC System:** Shimadzu Nexera X2

### PEAK IDENTITIES:

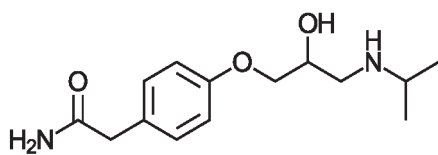
1. Atenolol
2. Sotalol
3. Nadolol
4. Pindolol
5. Acebutolol
6. Metoprolol
7. Bisoprolol
8. Oxprenolol
9. Labetalol
10. Alprenolol
11. Propranolol
12. Carvedilol



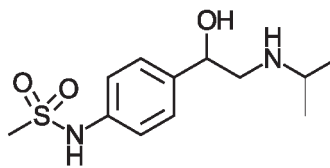


Application Note 195-B

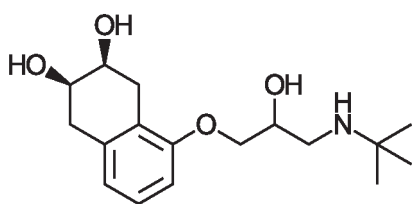
### STRUCTURES:



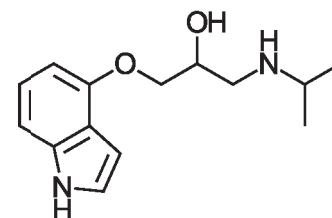
Atenolol



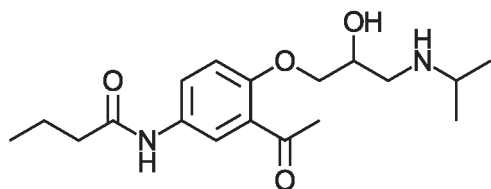
Sotalol



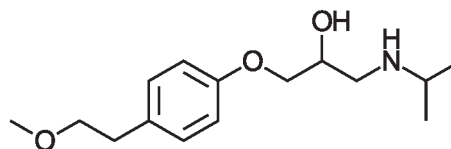
Nadolol



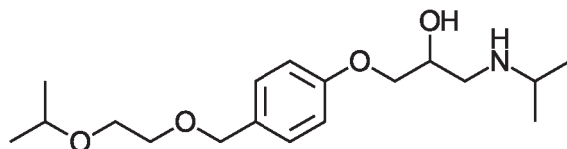
Pindolol



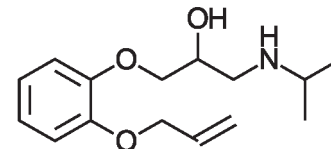
Acebutolol



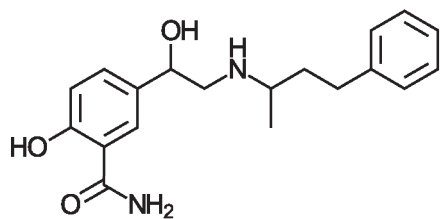
Metoprolol



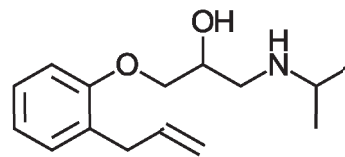
Bisoprolol



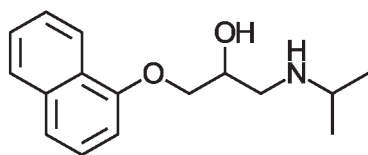
Oxprenolol



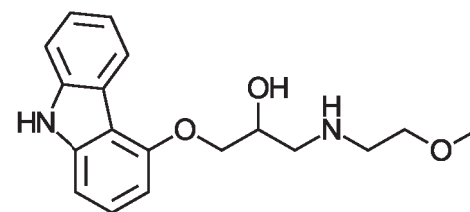
Labetalol



Alprenolol



Propranolol



Carvedilol

