

**Abstract:** The ability of a stationary phase to separate a wide variety of medicinal structures is highly desirable during analytical and preparative chromatography. Effective separation of acidic, basic, and neutral compounds by individual phases serves to demonstrate the wide applicability of an individual phase to cover molecular design space. A wide range of pharma-like structures were chromatographed to determine the best workhorse phases for use in a pharmaceutical setting.

**Experimental:**

Modifier: Methanol w/0.1% diethylamine

Injection volume = 5  $\mu$ l

Column: all phases 5  $\mu$ m, 4.6 x 250 mm

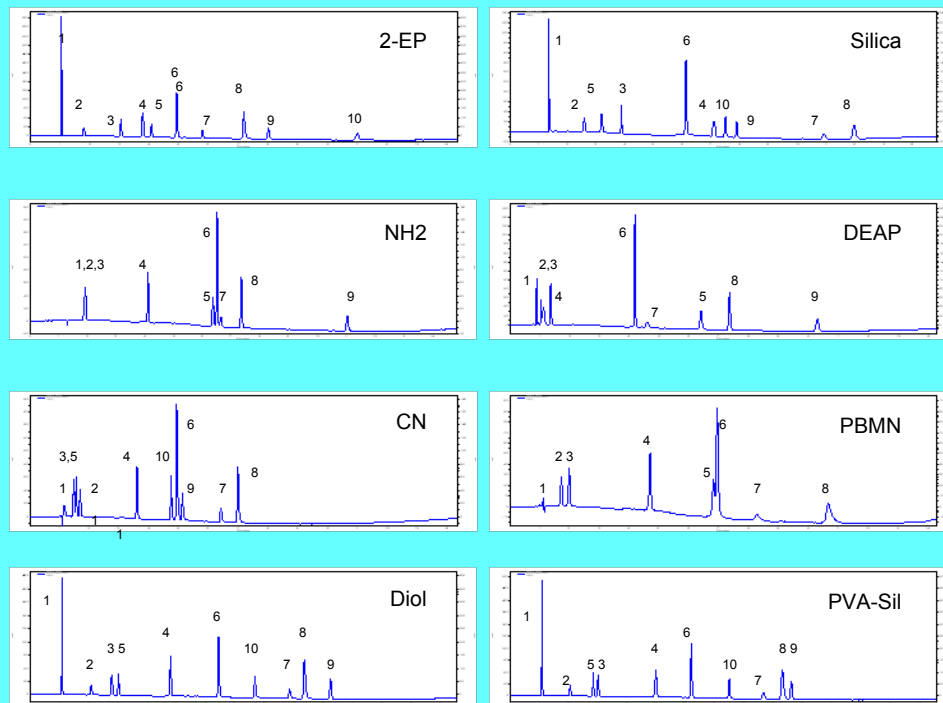
Column temp. = 40°C

Gradient: 5 to 65% modifier over 12 min

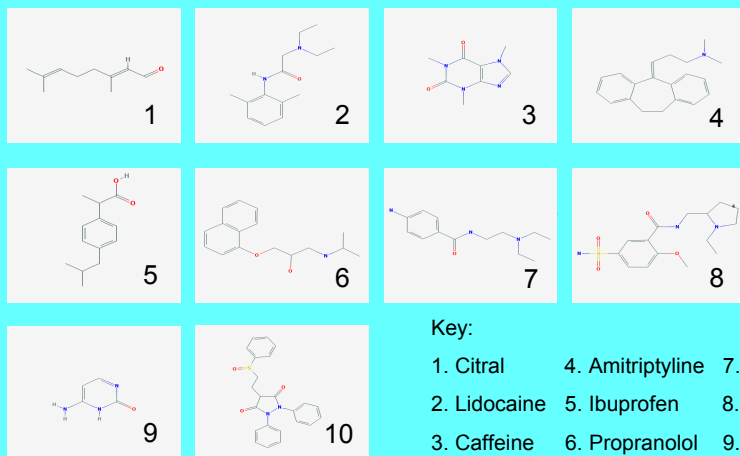
Flow rate = 3.5 ml/min

Outlet pressure = 150 bar

Detection: UV 230 nm



**Structures:**



**Key:**

- |              |                  |                 |
|--------------|------------------|-----------------|
| 1. Citral    | 4. Amitriptyline | 7. Procainamide |
| 2. Lidocaine | 5. Ibuprofen     | 8. Sulpride     |
| 3. Caffeine  | 6. Propranolol   | 9. Cytosine     |
|              | 10. Sulfiprazone |                 |

**Conclusions for Achiral Separations utilizing additives:**

- 2-EP is confirmed to offer good selectivity for separating a wide range of medicinal structures.
- Poly-hydroxylated surfaces (PVA-Sil, diol and silica) offer significant selectivity differences compared to 2-EP.
- There are important differences in selectivity between individual poly-hydroxylated phases.
- A poly-hydroxylated phase should be included in analytical screening.
- Amino phases offer less ability as a general use separations phase. These phases might prove useful for specialty programs.
- As in other modes of chromatography, cyano phase offers shorter retention and can be an alternate choice when workhorse phases are too retentive.