

## HPLC – INERTSIL

# Bioptic AV-1 and AV-2

- Glycoprotein bonded silica allows direct injection of plasma samples without protein removal
- Plasma proteins elute in void volume
- Small molecules elute after protein void peak with reverse phase type separation
- Bioptic AV-1 allows chiral separation of many drug compounds
- Large sample capacity

Analysis of drugs in plasma has traditionally required sample preparation to remove plasma proteins before HPLC analysis to avoid precipitation of plasma proteins and subsequent column clogging.

Bioptic AV columns allow the inner hydrophobic surface of the silica to be shielded by a permanently bonded hydrophilic avidin layer. Large molecules like plasma proteins are excluded from interacting with the hydrophobic inner surface by the avidin layer, and elute by size-exclusion mechanisms in the void volume. Smaller compounds, such as drugs and drug metabolites, pass through the avidin layer and interact with the hydrophobic inner layer by a reverse-phase mechanism.

Bioptic AV-1 contains non-denatured avidin and a chiral center, allowing separation of chiral drugs and their metabolites. Bioptic AV-2 contains a denatured form of avidin and lacks the chiral separating ability of AV-1, but offers different selectivity.

Bioptic columns are made with a 5 micron spherical silica, and the columns withstand pressures up to about 2250 PSI. AV-1 has a limit of about 20% on the organic content of the eluent, which there is no such limitation on AV-2. Recommended pH range is 2 to 7.5, while pH ranges where hydrophobic interactions occur are between 2-3.5 and between 6 and 7.5.

