HAINEWS - Number 7
HPLC Column Developments from Higgins Analytical

Higgins Analytical

In This Issue:

TARGA Microbore Columns:
Fast Plasma Drug Analysis
Stable under harsh operating conditions

Combinatorial Chemistry:
HAISIL HL C18 5µm out performs competitors' new 2µm columns!

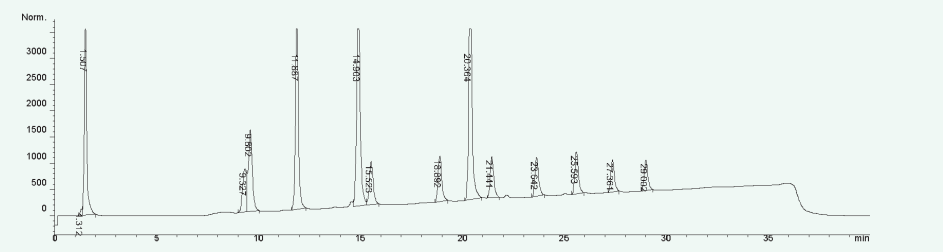
A New Catalog:
A new catalog is available featuring Higgins Analytical's latest columns, cartridges, and chemistries.

High Speed Microbore Analysis of Plasma Drug Samples:

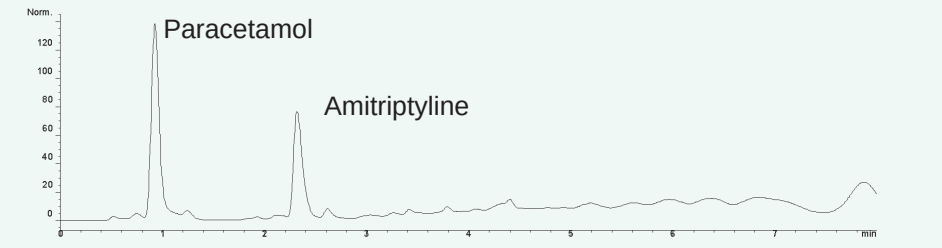
Column stability and efficiency are primary issues for researchers developing fast HPLC methods with low detection limits. A recent example of a very high throughput plasma drug analysis illustrated several performance features of Higgins Analytical's TARGA microbore columns.

Experimental: 200µL of plasma is precipitated with MeCN, evaporated to dryness, then dissolved in 10µL of 10% MeOH/water solution. The 2.5µL injection on a TARGA C18 100x1mm column is equivalent to 50µL of plasma. A 0 - 95% MeCN vs 0.1% aqueous formic acid gradient is run at 300µL/min over 5min, held for 1min, then returned to 0% MeCN by 6.1min. The analysis is repeated every 8 minutes.

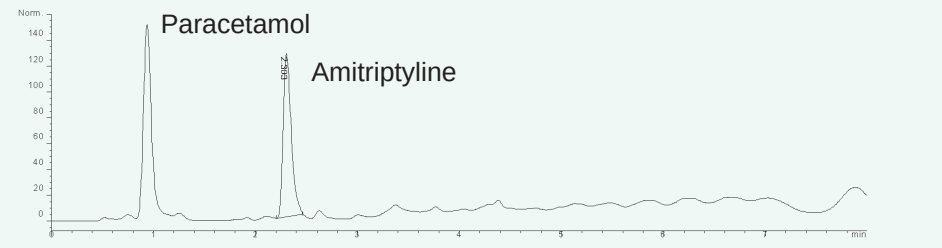
Good column efficiency and lifetime are characteristics of TARGA C18 columns even under these demanding conditions.



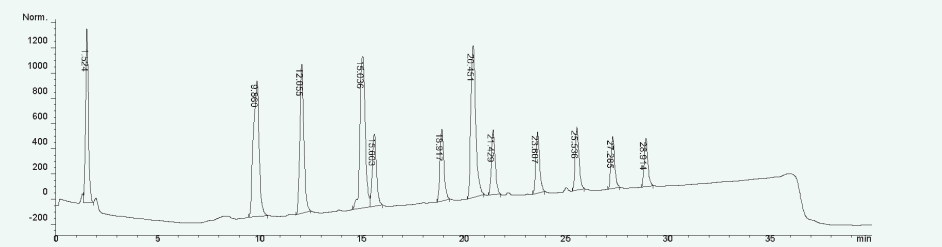
A thirteen component *Column Suitability Gradient Test* on a new 100x1.0mm TARGA C18 Column, P/N TS-1001-C185.



The first analysis of a 10µg/mL plasma drug sample on a new 100x1.0mm TARGA C18 Column. Note the good amitriptyline peak symmetry and efficiency at 300µL/min.



The 80th analysis of plasma drug samples on a 100x1.0mm TARGA C18 Column. No change in retention times or peak shapes even under the high flow rate conditions.



A repeat of the thirteen component *Column Suitability Test* on a 100x1.0mm TARGA C18 Column after 80 analysis of plasma drug samples at a flow rate of 300 µL/min.

Higgins Analytical is grateful to Rob Plumb, BioMet, Glaxo Wellcome, Hertfordshire, UK for permission to share these data.

Application Highlights:

- High stability and low back pressure (150bar) even at 6 times the optimum flow rate.
- Basic drugs don't tail on TARGA columns when using a only a mild formic acid buffer that is ideal for LC/MS applications.
- The TARGA column shows unique selectivity, performs well, and equilibrates quickly in 100% aqueous conditions.

Combinatorial Chemistry.... Why 2µm columns will not address this new technology's high throughput requirements.

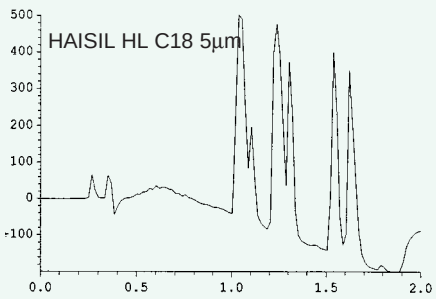
Combinatorial Chemistry is another example of an emerging technology that is going to place new demands on HPLC for speed and assay robustness.

Industry innovators continue to introduce "new" technology HPLC columns based on non-porous and porous particles with 2µm or smaller diameters. There have even been rumblings about columns packed with 1µm particles. Don't hold your breath! The physical constraints of column diameter, particle size, and column length were described over 20 years ago, but we have a penchant for ignoring these teachings as we get swept away by today's marketing enthusiasm.

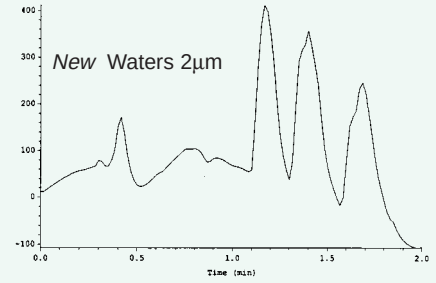
The following chromatograms illustrate how much more important the roles of selectivity and good column packing technology are in comparison to particle size when it comes to sheer horsepower in HPLC separations.

This important point is illustrated by the analysis of two combinatorial libraries on two manufacturers' 2µm columns and comparing the results of the same analysis on a short HAISIL HL C18 5µm column.

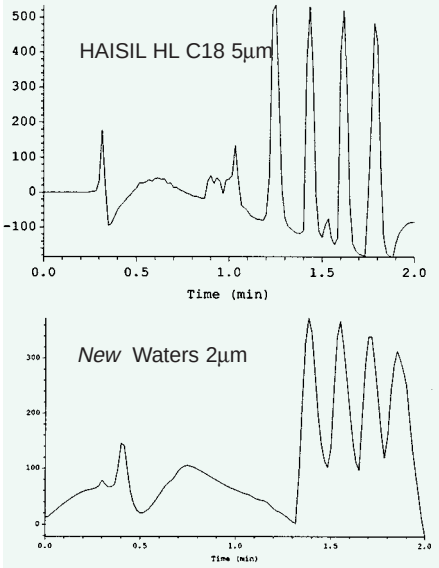
The objective of this study is to resolve the two multicomponent mixtures with a fast gradient in as little as two minutes.



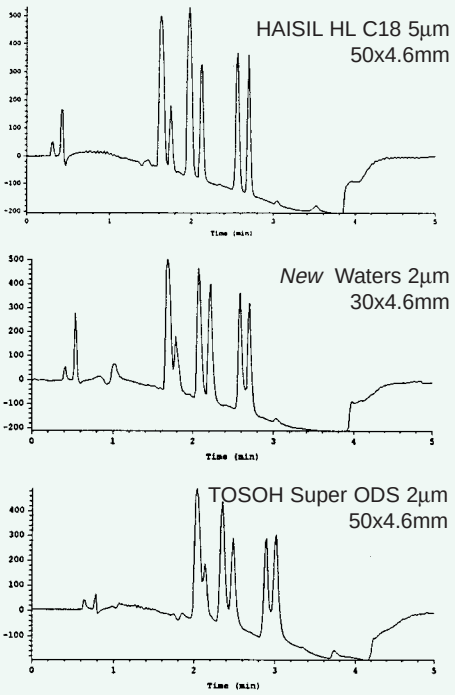
A six component test mix analyzed on a 50x4.6 mm HAISIL HL C18 5µm column with a fast MeCN/water 0.1% TFA gradient.



The same six component test mix analyzed on a *new* Waters 30x4.5mm 2µm combinatorial analysis column.



A four component library analyzed with a fast gradient on a HAISIL HL C18 5µm (top) and new Waters 30x4.6mm 2µm column (bottom).



The same six component library shown at the top of the column to the left analyzed with a slower MeCN/water 0.1% TFA gradient.

Find out more about these and other Higgins Analytical products in the new Y2K compliant Catalog.

Higgins Analytical Products are sold and supported by qualified distributors worldwide:

May 1999

Higgins Analytical, Inc.

Expert Manufacturer of HPLC Consumables

1235 Pear Ave, Suite 105, Mountain View, CA 94043
Phone: 650-988-8930 or 800-988-6889
Fax: 650-988-8931 or 800-988-6881
e-mail: hplc@higanalyt.com
Please visit our web site: www.higanalyt.com