



## Effect of Varying Co-Solvents in SFC Method Development on a Whelk-O 1® Chiral Stationary Phase

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*Supercritical Fluid Chromatography (SFC) is quickly becoming a popular choice by chromatographers for analytical and preparative separations.*

Some of the variables involved in SFC method development are temperature, pressure, and co-solvent. This study was conducted with selected chiral compounds analyzed on the Whelk-O 1® Chiral Stationary Phase where the co-solvent was changed while pressure and temperature were held constant. Data was summarized to demonstrate the effect of varying co-solvents on retention ( $k'$ ) and selectivity factors ( $\alpha$ ).

The co-solvent effect data are summarized in tabular form (Table I), and in graphical form (Figure 1).

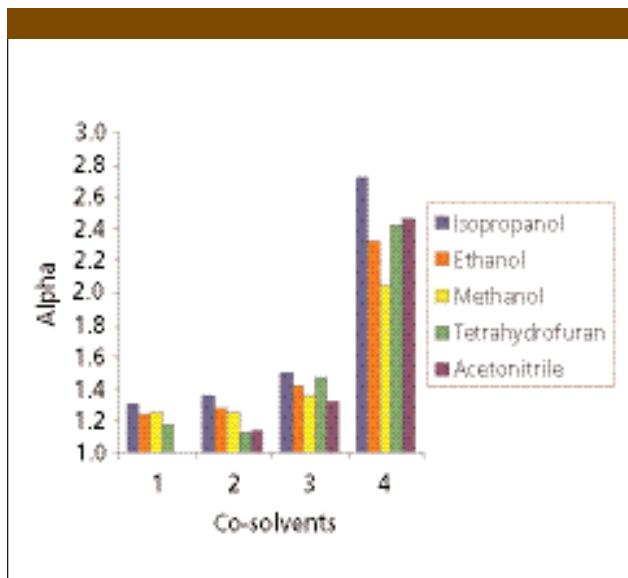
### Conclusion

Variation in the co-solvent provided an interesting array of results.

Selectivity appeared to be highest using isopropanol for all the compounds, though the trends with the other co-solvents differed among the compounds. Retention showed no uniform trend of co-solvent effect among the compounds. Focusing only on the three alcohols, it appears that increasing polarity correlates with decreasing selectivity and decreasing retention.

The analyst should consider evaluating more than one co-solvent when developing chiral separations on Whelk-O 1® columns.

All chromatography was performed on a THAR SFC Method Station® (analytical scale SFC).



**Figure 1:** Group 1: Troger's Base, Group 2: Chlormezanone, Group 3: Indapamide, Group 4: Devrinol.

Table I.

Co-Solvent	Troger's Base		Chlormezanone		Indapamide		Devrinol	
	$k'$	$\alpha$	$k'$	$\alpha$	$k'$	$\alpha$	$k'$	$\alpha$
IPA	3.82	1.31	4.23	1.36	5.95	1.51	2.50	2.72
Ethanol	2.85	1.24	2.75	1.28	3.47	1.42	1.66	2.33
CH <sub>3</sub> OH	2.30	1.25	2.16	1.25	2.48	1.36	1.36	2.05
THF	4.71	1.18	5.29	1.13	4.69	1.47	1.19	2.42
CH <sub>3</sub> CN	**	**	4.12	1.15	3.33	1.33	1.70	2.47

\*\*Note: Troger's Base was not eluted off the column with acetonitrile.

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