

High-Quality Analysis of Pesticides in Cannabis Using QuEChERS, Cartridge SPE Cleanup, and GCxGC-TOFMS

As medical marijuana is more frequently prescribed, patient safety must be ensured. Pesticide residue testing is an important part of assuring safe product is dispensed, but analysis can be extremely challenging due to matrix complexity. The use of QuEChERS, cartridge SPE cleanup, and GCxGC-TOFMS as presented here produces high-quality quantitative data for this difficult analysis.

Don't Overestimate Cannabidiol During Medical Cannabis Potency Testing by Gas Chromatography

Proper GC column choice is essential for accurate and robust medical cannabis potency testing. Using an Rxi®-35Sil MS column under the instrument conditions shown here allows fast, accurate reporting of cannabichromene and cannabidiol in medical marijuana samples.



Raptor™ Biphenyl LC Columns Brochure

Raptor™ LC columns combine the speed of superficially porous particles (i.e., SPP or "core-shell") with the resolution of highly selective USLC® technology. Featuring Restek's most popular LC stationary phase, the rugged Raptor™ Biphenyl is extremely useful for fast separations in bioanalytical testing applications like drug and metabolite analyses, especially those that require a mass spectrometer (MS). (PDF - 5848kB)

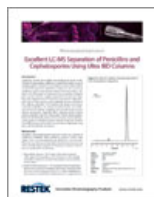


Dissecting Raptor™ LC Columns: A closer look at a new species

When we engineered our superficially porous particle (SPP or "core-shell") Raptor™ LC columns, we developed the bonding chemistries that are best suited to both the SPP construction and our highly selective USLC® phases. But we didn't stop here. Take a closer look at a new species as we dissect the upgraded hardware and new, proprietary packing techniques behind Raptor™ LC columns and Raptor™ EXP® guard columns. (PDF - 1987kB)

Characterizing Cellular Fatty Acid Methyl Ester (FAME) Profiles to Identify Bacteria Using Gas Chromatography

Dr. Radomír Čabala, Head of the Toxicology Department at the General University Hospital in Prague, presents work on the potential utility of GC-TOFMS analysis of cellular fatty acid methyl esters (FAMEs) in identifying clinically relevant bacteria.



Excellent LC-MS Separation of Penicillins and Cephalosporins Using Ultra IBD Columns

Unlike C18 columns, Ultra IBD (intrinsically base deactivated) columns can interact in normal phase mode with analytes that possess charged functional groups, providing greater versatility for LC-MS analyses. Excellent peak shape in either normal phase mode or reversed phase mode increases sensitivity and improves quantification. The 4-page note shows example analyses of penicillins and cephalosporins. (PDF - 987kB)



Rxi®-624Sil MS Columns—Exceptionally Inert, Low Bleed Columns for Volatiles Analysis

Analyze volatile compounds and polar analytes with greater confidence using Rxi®-624Sil MS columns. Optimized selectivity, higher inertness, and lower bleed result in reliable separations and accurate, trace-level determinations. Includes environmental and pharmaceutical applications. (PDF - 3111kB)



USLC™ Column Selection & Mobile Phase Adjustment Guide

USLC™ columns and this guide will help you easily choose the right stationary phase to target nearly any analyte in reversed phase or HILIC method development. It will also help you adjust your mobile phase to further improve results without guesswork or wasted time. (PDF - 1682kB)

USLC[®] Columns Put the Right Tools in Your LC Method Development Toolbox

Column selectivity has the most significant influence on chromatographic peak separation, or resolution, so choosing the right column can greatly speed up HPLC and UHPLC method development. In this article, we discuss column choice and identify a set of just 4 stationary phases—Restek's USLC[®] column set—that encompasses the widest range of reversed phase selectivity available today.



How Column Inertness Improves the Chromatography of Basic Compounds

Not all column deactivations are appropriate for analyzing basic compounds. Here we demonstrate the effect of column inertness on peak shape, and discuss its role in improving method accuracy, sensitivity, and development time. (PDF - 227kB)

Fast Screening of Recalled Tylenol[®] for Tribromoanisole and Related Adulterants Using QuEChERS and GC-TOFMS

Screening methods for consumer product adulteration cases, such as the recent Tylenol recall, can benefit from fast QuEChERS-based sample preparation and sensitive, full mass-range GC/TOF-MS.

Determining Pesticides in Dietary Supplements with QuEChERS Extraction, Cartridge SPE, and GCxGC-TOFMS

The novel approach used here combines QuEChERS extraction, cartridge SPE cleanup, and GCxGC-TOFMS analysis, resulting in good recoveries for a wide range of pesticides in dietary supplements. Matrices include dandelion root, sage, and a multi-herb finished product.



USLC[™] Columns: Choose Columns Fast. Develop Methods Faster.

Restek USLC[™] columns offer the widest range of selectivity available and are an integral part of successful method development. Ideal for column switching systems, these columns provide orthogonal separations to create optimal resolution and robust methods—all in a 4-column set. (PDF - 1813kB)

Column Choice: A Critical Factor for Successful UHPLC Integration

Column choice is a critical factor in successfully transferring methods between UHPLC and HPLC. Here, we discuss the column qualities that contribute to the successful integration of UHPLC technology.

Novel Column Chemistry—High Impact, Low Cost Technology

Novel column chemistries are a simple change in an already budgeted consumable that can lead to optimized and more reliable methods—giving a fast return on a minimal investment.

Beyond C18—Increase Retention of Hydrophilic Compounds Using Biphenyl Columns

The Pinnacle[®] DB Biphenyl column offers enhanced retention and alternate selectivity for aromatic, unsaturated, and sulfur-containing hydrophilic compounds. Here we demonstrate significantly greater retention of sulfone- and sulfoxide-containing drug probes, compared to phenyl, phenyl hexyl, and alkyl (C18) columns. Only the Biphenyl column, using pi-pi interactions, separated both test probes to $k' > 2$, the level needed to ensure separation from unretained matrix contaminants.

Two Options for Analyzing Potential Genotoxic Impurities in Active Pharmaceutical Ingredients

Two options for the analysis of PGIs in API have been developed by Merck and Restek to meet different laboratory needs. The first option is a fast method for the analysis of sulfonate esters on the Rx1[®]-5Sil MS column. The second option is a comprehensive method for the analysis of both sulfonate esters and alkyl halides on the Rtx[®]-200 column. Both methods require very little sample preparation, which helps increase laboratory productivity.

How do intrinsically base-deactivated phases work?

Analyzing basic compounds can be somewhat troublesome on traditional alkyl stationary phases, namely conventional C18 columns. This is largely due to the interaction of analyte molecules with silanol groups present on the silica surface. To better understand the workings of silanol interactions, it is important to consider the composition of the support material. Silica is the most commonly used support in the production of HPLC columns, mainly because it is well-suited to high-pressure chromatographic separations, giving high efficiencies and good reproducibility. Silica offers bed and pressure stability and is highly porous, which ultimately gives rise to its large surface area, increased bonding capacity and high peak efficiencies. Silica also possesses widely-studied and effective bonding chemistries, making possible diverse analyte selectivities through a wide variety of bonded stationary phases.

Easy Transfer of HPLC Methods to UHPLC

Ultra High Pressure Liquid Chromatography (UHPLC) is a rapidly growing technique that can provide faster analysis times. Scaling conventional HPLC methods down to UHPLC can be an effective way to take advantage of shorter run times and increase sample throughput. Here we review the factors that must be considered when scaling down an existing method. A sulfonamides method transfer is used as an example; chromatograms and formulas for all required calculations are included.

Optimize Selectivity & Efficiency in UHPLC Separations

Ultra-high pressure liquid chromatography (UHPLC) can significantly increase efficiency and produce faster separations. The small particle sizes used in UHPLC improve efficiency; however selectivity is still the most important factor affecting compound resolution. Here we demonstrate the importance of stationary phase choice in UHPLC separations. By optimizing selectivity for your analytes of interest, faster separations can be achieved without compromising resolution.

Revised USP 467 Residual Solvent Method

The United States Pharmacopeia recently revised the general chapter on residual solvent analysis, USP <467>, to mirror the International Conference on Harmonization (ICH) guidelines for the identification, control and quantification of residual solvents. This revision, effective July 1, 2007, replaces previous methods that were not consistent with the ICH guidelines. Here we provide an overview, chromatograms, and technical tips for successfully running the new procedure.



Developing New Methods for Pesticides in Dietary Supplements

QuEChERS is a simple, effective approach to sample prep that can be applied to the analysis of pesticides in dietary supplements. Here we demonstrate a QuEChERS, cSPE, GC-TOFMS procedure that results in good recoveries for a wide range of pesticides in dandelion root. (PDF - 5523kB)



Residual Solvent Analysis: Implementing USP <467>

This 12-page reference includes a review of headspace fundamentals, the revised USP <467> method (July, 2008), chromatography for Procedures A, B, and C, and technical tips for optimization. Guidance on fast, effect method development is given. (PDF - 471kB)

How do small particle size columns increase sample throughput?

Why do smaller particle size columns improve resolution?

Explaining the Small Particle Advantage

Small particle HPLC columns can offer faster analysis times but only if the particle size distribution is tightly controlled. Restek's 1.9µm Pinnacle™ DB columns have tight, symmetric particle size distributions and contain no particles less than 1µm. Here we demonstrate how our stringent quality requirements translate into faster, more reproducible results compared to competitor columns. Greater column efficiency and reproducibility mean faster throughput and more consistent results.

Organic Volatile Impurities: Retention Time Index

To make column selection for residual solvents easy, Restek has benchmarked the ICH Class 1, 2 and 3 residual solvents on our most popular OVI columns.

Separating NSAIDs through Aromatic Selectivity

Non-steroidal anti-inflammatory drugs (NSAIDs) are typically separated on C18 phases. Separations on our Allure® Biphenyl HPLC column are based on pi-pi interactions, resulting in optimized retention and selectivity. Increased retention requires higher organic content in the mobile phase, increasing desolvation efficiency in LC/MS. Simple mobile phase changes enhance selectivity, making this column a great alternative to conventional phenyl phase columns, especially in method development.

Optimized RP-HPLC Method for Hydroxybenzoic Acids

Among hydroxybenzoic acids, hydroxyl groups on the benzene ring vary by position and number, creating differences in overall polarity and solubility. The unique bonding chemistry of the Ultra Aqueous C18 phase assures high resolving power, the best separations across a broad range of analyte polarity, and compatibility with 100% aqueous mobile phases.

Assaying Local Anesthetics by GC/FID

An Rxi®-5ms column and a wool-packed inlet liner provide the stability and inertness needed for these basic, active analytes. Chromatography from a six-replicate system suitability analysis was well within normal acceptance criteria. USP tailing factors were approximately 1.00 for all analytes; retention times and area responses were very stable.

8-Minute GC Analysis of Residual Solvents

Single-injection, dual-column detection/confirmation assay is feasible for regulated solvents in pharmaceutical products, but no temperature program provides sufficient resolution on both columns. Using a Restek G43/G16 column pair and independent temperature programs in a Gerstel MACH column heating system, we analyzed and confirmed 23 Class 2 solvents in 8 minutes.

RP-HPLC Analysis of Selective Serotonin Reuptake Inhibitors

Two Restek columns provide good retention, selectivity, and peak shape for SSRIs, without ion-pairing chromatography. Choose an Allure™ Basix column and neutral pH conditions, or an Ultra PFP column and acidic conditions — either will improve performance for these basic compounds, relative to alkyl phases.

Using π - π Interactions to Enhance Selectivity for Unsaturated Compounds

Relative to phases that separate via hydrophobic or polar interactions, the Allure™ Biphenyl stationary phase offers better retention, selectivity, and efficiency, when analyzing compounds with differences in the numbers and locations of unsaturated bonds in the hydrocarbon ring structure.

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