Agilent Technologies

Agilent J&W HP-5ms

A collection of citations to advance your research

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Clinical research

Nicotinamide-independent asymmetric bioreduction of Cdouble bond; length as m-dashC-bonds via disproportionation of enones catalyzed by enoate reductases

Tetrahedron, **66**, 663-667 (2012)
Clemens Stueckler *et al.*

Tags
CP-1301, HP-5ms, 7890A GC, 5975C MSD, clinical research

Abstract
Enzymatic disproportionation of cyclohex-2-enone was screened using Agilent J&W GC columns. Published by Elsevier B. V.

Essential oils of six *Juniperus* taxa indigenous in Greece

Parasitology Research, **110**, 1829-1839 (2012)
F. Vourlioti-Arapi *et al.*

Tags
HP-5ms, 7890A GC, 5957C MSD, clinical research, disease research

Abstract
Juniper essential oils were analyzed on an Agilent J&W HP-5ms column in an Agilent 7890A/5957C GC/MS. Published by Springer.

Gas Chromatography-Mass Spectrometry Designation and Prediction of Metabolic Dealkylation and Hydroxylation Reactions in Xenobiotics Exemplified by Tramadol

Journal of Analytical Toxicology, **33**, 34-40 (2009)

Babiker M. El-Haj, Abdelkader M. Al-Amri, Heyam S. Ali

Tags

HP-5ms, clinical research

Abstract

Metabolic dealkylation and hydroxylation reactions in xenobiotics are common and may take place at different sites in the molecules. Sometimes confusion may arise as to the nature and site of the resulting metabolic change when there is more than one potential site. The use of GC-MS in resolving the problem has been demonstrated by using tramadol as example. Human urine samples containing tramadol and its metabolites were extracted under basic pH conditions and analyzed by GC-MS, in the electron impact and chemical ionization modes, before and after trimethylsilyl (TMS) derivatization. By recognizing the mass-to-charge ratios of molecular and base-peak ions in the mass spectra, it was possible to predict and designate sites of demethylation and hydroxylation in tramadol metabolites. In addition to the designation of the known tramadol metabolites, the practice has led to the tentative characterization of hydroxytramadol and norhydroxytramadol as new metabolites of tramadol in humans. Possible extension of the modus operandi to other xenobiotics was discussed.

Buprenorphine Alters Desmethylflunitrazepam Disposition and Flunitrazepam Toxicity in Rats

Toxicological Sciences, **106**, 64-73 (2008)
S. Pirnay *et al.*

Tags
HP-5ms, clinical research

Abstract

High-dosage buprenorphine (BUP) consumed concomitantly with benzodiazepines (BZDs) including flunitrazepam (FZ) may cause life-threatening respiratory depression despite a BUP ceiling effect and BZDs' limited effects on ventilation. However, the mechanism of BUP/FZ interaction remains unknown. We hypothesized that BUP may alter the disposition of FZ active metabolites in vivo, contributing to respiratory toxicity. Plasma FZ, desmethylflunitrazepam (DMFZ), and 7-aminoflunitrazepam (7-AFZ) concentrations were measured using gas chromatography–mass spectrometry. Intravenous BUP 30 mg/kg pretreatment did not alter plasma FZ and 7-AFZ kinetics in Sprague-Dawley rats infused with 40 mg/kg FZ over 30 min, whereas resulting in a three-fold increase in the area under the curve (AUC) of DMFZ concentrations compared with control ($p < 0.01$). In contrast, BUP did not significantly modify plasma DMFZ concentrations after intravenous infusion of 7 mg/kg DMFZ, whereas resulting in a similar peak concentration to that generated from 40 mg/kg FZ administration. Regarding the effects on ventilation, BUP (30 mg/kg) as well as its combination with FZ (0.3 mg/kg) significantly increased PaCO2, whereas only BUP/FZ combination decreased PaO2 ($p < 0.001$). Interestingly, FZ (40 mg/kg) but not DMFZ (40 mg/kg) significantly increased PaCO2 ($p < 0.05$), whereas DMFZ but not FZ decreased PaO2 ($p < 0.05$). Thus, decrease in PaO2 appears related to BUP-mediated effects on DMFZ disposition, although increases in PaCO2 relate to direct BUP/FZ additive or synergistic dynamic interactions. We conclude that combined high-dosage BUP and FZ is responsible for increased respiratory toxicity in which BUP-mediated alteration in DMFZ disposition may play a significant role.

Environmental

Selective hydroxylation of alkanes by an extracellular fungal peroxygenase

FEBS Journal, **278**, 3667-3675 (2011)
Sebastian Peter *et al.*

Tags
DB-5ms UI, HP-5ms, 6890N GC, 5973 MSD, environmental, soil, sludges and sediments

Abstract
Agilent J&W DB-5ms UI and HP-5ms GC columns, fitted to an Agilent 6890 GC with 5973 MSD, were used to study fungal alkanes. Published by John Wiley & Sons Ltd.

Smelling your way to food: can bed bugs use our odour?

Journal of Experimental Biology, **215**, 623-629 (2012)
V. Harraca *et al.*

Tags
HP-5ms, HP-INNOWax, 6890 GC, 5973 MSD, environmental, air analysis

Abstract
Human whole-body volatiles were analyzed using Agilent J&W HP-5ms and HP-INNOWax columns in an Agilent 6890/5973 GC/MSD. Published by the Company of Biologists.

Role of polymer complexes in the formation of biofilms by corrosive bacteria on steel surfaces

Applied Biochemistry and Microbiology, **48**, 262-269 (2012)
L. M. Purish *et al.*

Tags
DB-225ms, HP-5ms, 6890N GC, 5973 MSD, environmental, water analysis

Abstract
Polyol acetate neutral sugar derivatives were analyzed using an Agilent J&W DB-225ms column fitted to an Agilent 6890N/5973 GC/MS. Acidic and neutral sugars as acetylated methylglycosides, were analyzed using an Agilent J&W HP-5ms column. Published by Springer.

[A new validated analytical method for the determination of tributyltin in water samples at the quantification level set by the European Union]

Journal of Chromatography A, **1261**, 151-157 (2012)
Christophe Devos, Frank David, Pat Sandra

Tags
DB-17ms, HP-5ms, 7890 GC, 7000B Triple Quadrupole MS, environmental, water analysis

Abstract
Two-dimensional analysis of tributyltin was performed using Agilent J&W DB-17ms and HP-5ms GC columns on an Agilent 7890 GC/7000B Triple Quadrupole with inert electron ionization source. Published by Elsevier B. V.

[Collection of volatiles from honeybee larvae and adults enclosed on brood frames]

Apidologie, **43**, 715-730 (2012)
Mark J. Carroll, Adrian J. Duehl

Tags
DB-35ms, HP-5ms, 6890 GC, 5973 MSD, environmental, air analysis and sediments

Abstract
Honeybee volatiles were analyzed using an Agilent J&W HP-5ms column on an Agilent 6890/5973 GC/MSD. Analyte identity was confirmed using an Agilent J&W DB-35ms column. Published by Springer.

Modern and Fossil Contributions to Polycyclic Aromatic Hydrocarbons in PM2.5 from North Birmingham, Alabama in the Southeastern U.S.

Environmental Science & Technology, **46**, 1422-1429 (2012)

Li Xu *et al.*

Tags

CP-Sil 5 CB, HP-5ms, 6890 GC, 5973 MSD, environmental, air analysis

Abstract

Analyzing the radiocarbon (14C) content of polycyclic aromatic hydrocarbons (PAHs) in atmospheric particulate matter can provide estimates on the source contributions from biomass burning versus fossil fuel. The relative importance of these two sources to ambient PAHs varies considerably across regions and even countries, and hence there is a pressing need to apportion these sources. In this study, we advanced the radiocarbon analysis from bulk carbon to compound class specific radiocarbon analysis (CCSRA) to determine Δ14C and δ13C values of PAHs in PM2.5 samples for investigating biomass burning and fossil fuel source contributions to PAHs from one of the Southeastern Aerosol Research and Characterization (SEARCH) sites in North Birmingham (BHM), Alabama during winter (December 2004-February 2005) and summer (June-August 2005) by accelerator mass spectrometry. To compare our ambient samples to known sources, we collected and analyzed fenceline samples from the vicinity of a coke plant in BHM. As expected, PAHs from the coke plant fenceline samples had very low radiocarbon levels. Its Δ14C varied from −990 to −970‰, indicating that 97 to 99% were of fossil source. PAHs in the ambient PM2.5 had Δ14C from −968 to −911 ‰, indicating that 92–97% of PAHs were from fossil fuel combustion. These levels indicated the dominance of fossil sources of ambient PAHs. The radiocarbon level of ambient PAHs was higher in winter than in summer. Winter samples exhibited depleted δ13C value and enriched Δ14C value because of the increased contribution of PAHs from biomass burning source. However, biomass burning contributed more to heavier PAHs (modern source accounting for 6–8%) than lighter ones with a modern contribution of 3%.

Comprehensive analysis of the toxic and refractory pollutants in acrylonitrile–butadiene–styrene resin manufacturing wastewater by gas chromatography spectrometry with a mass or flame ionization detector

Journal of Chromatography A, **1244**, 161-167 (2012)
Bo Lai *et al.*

Tags

DB-WAX, HP-5ms, 7890 GC, 5975 MSD, environmental, water analysis

Abstract
Agilent J&W GC columns and instruments were used to detect and confirm the identity of 37 compounds in ABS resin manufacturing wastewater. Published by Elsevier B. V.

Analysis of Endocrine Disrupting Pesticides by Capillary GC with Mass Spectrometric Detection

International Journal of Environmental Research and Public Health, **9**, 3166-3196 (2012)
Eva Matisová , Svetlana Hrouzková

Tags

Bond Elut ENV, HP-5ms, CP-Sil 5 CB, environmental, water analysis

Abstract
Endocrine disrupting chemicals, among them many pesticides, alter the normal functioning of the endocrine system of both wildlife and humans at very low concentration levels. Therefore, the importance of method development for their analysis in food and the environment is increasing. This also covers contributions in the field of ultra-trace analysis of multicomponent mixtures of organic pollutants in complex matrices. With this fact conventional capillary gas chromatography (CGC) and fast CGC with mass spectrometric detection (MS) has acquired a real importance in the analysis of endocrine disrupting pesticide (EDP) residues. This paper provides an overview of GC methods, including sample preparation steps, for analysis of EDPs in a variety of matrices at ultra-trace concentration levels. Emphasis is put on separation method, mode of MS detection and ionization and obtained limits of detection and quantification. Analysis time is one of the most important aspects that should be considered in the choice of analytical methods for routine analysis. Therefore, the benefits of developed fast GC methods are important. Published by MDPI.

Food testing and agriculture

Multiresidue determination of 375 organic contaminants including pesticides, polychlorinated biphenyls and polyaromatic hydrocarbons in fruits and vegetables by gas chromatography–triple quadrupole mass spectrometry with introduction of semi-quantification approach

Journal of Chromatography A, **1270**, 283-295 (2012)
Kaushik Banerjee *et al.*

Tags
QuEChERS, HP-5ms, 7890A GC, 7000B Triple Quadrupole MS, food testing and agriculture, pesticides

Abstract
Agilent QuEChERS sample preparation combined with Agilent GC (7890A) and MS (7000B Triple Quadrupole), with Agilent J&W HP-5ms analytical columns and PTV were used for the analysis of 375 pesticide residues in a variety of produce samples. Published by Elsevier B. V.

Determination of pesticide residues in complex matrices using multi-walled carbon nanotubes as reversed-dispersive solid-phase extraction sorbent

Journal of Separation Science, **35**, 153-158 (2012)
Pengyue Zhao *et al.*

Tags
HP-5ms, HP-INNOWax, 6890 GC, 5973 MSD, food testing and agriculture, pesticides

Abstract
Agilent J&W GC columns were used with Agilent 6890 GC and 5973 MSD to analyze pesticide residues in leek, onion, ginger, and garlic. Published by John Wiley & Sons Ltd.

Residue levels of captan and trichlorfon in field-treated kaki fruits, individual versus composite samples, and after household processing

Food Additives and Contaminants, **23**, 591-600 (2006)
M. L. Fernández-Cruz *et al.*

Tags
CP-Sil 24 CB, CP-Sil 8 CB, HP-5ms, food testing and agriculture, pesticides

Abstract
The dissipation of residue levels of captan and trichlorfon in field-treated kaki crops was studied using Agilent J&W GC columns. Published by Taylor and Francis.

[Analytical Techniques of Non Dioxin-Like Polychlorinated Biphenyls]

Journal of the National Food Reference Laboratory, **1**, 45-52 (2010)
Gül Çelik Çakiroğullari, Devrim Kiliç

Tags
CP-Sil 5/C18 CB for PCB, CP-Sil 8 CB for PCB, DB-5, DB-5ms, HP-5, HP-5ms, food testing and agriculture, persistent organic pollutants

Abstract
The authors describe a range of analytical techniques for the detection of PCBs, using Agilent J&W GC columns. Published by the Turkish National Food Reference Laboratory.

[A novel method for determination of patulin in apple juices by GC–MS]

Food Chemistry, **141**, 1619-1623 (2013)
Niloofar Kharandi. Mehran Babri, Jila Azad

Tags
Bond Elut QuEChERS, HP-5ms, 6890 GC, 5973N MSD, food testing and agriculture, mycotoxins and biotoxins

Abstract
Agilent Bond Elut PSA in bulk was used to extract patulin from apples. Analysis was then accomplished with an Agilent J&W HP-5ms GC column fitted to an Agilent 6890 GC with detection provided by an Agilent 5973N mass selective detector. Published by Elsevier B. V.

Comparison of QuEChERS official methodologies for the analysis of pesticide residues on Colombian fruit by GC-MS

Food Additives & Contaminants: Part A, **30**, 949-957 (2012)
Julio César España Amórtegui, Jairo Arturo Guerrero Dallos

Tags
Bond Elut QuEChERS, HP-5ms, 7890A GC, 5975C MSD, 7673 Autosampler, food testing and agriculture, pesticides

Abstract
Surveys of pesticide residues in fruit are important to demonstrate conformity with strict regulations of newly open markets for export of exotic fruit. Multi-residue methods are tools to ensure compliance with regulations and both, the CEN and the AOAC have versions of QuEChERS which are used effectively as mainstream methods. The aim of this study was to assess their performance and pick the optimum one for this particular application using GC-MS. The use of graphitized carbon black (GCB) to improve clean-up was assessed. Optimization of large volume injection (LVI) and implementation of concurrent backflushing was needed in order to improve sensitivity at a low concentration levels for 33 pesticides (0.01 $mg.kg^{-1}$). Cleaner TIC profiles were obtained with the CEN method. Recoveries of most of the pesticides showed statistical differences (α=0.05) when GCB was used in the AOAC method, unlike the CEN method. In general, GCB/no-GCB use for CEN clean-up gave good, very similar results for all fruit, though some pesticides showed some adsorption on the GCB surface. The CEN general method was preferred since acceptable recoveries (>80%) and RSD (<20%) can be achieved for all analytes. © 2014 Taylor & Francis.

Forensics and toxicology

Development and validation of a gas chromatography-mass spectrometry method for the simultaneous determination of buprenorphine, flunitrazepam and their metabolites in rat plasma: application to the pharmacokinetic study

Journal of Chromatography B, **807**, 335-342 (2004)
S. Pirnay *et al.*

Tags
Bond Elut Certify, HP-5ms, forensics and toxicology

Abstract
An Agilent J&W HP-5ms GC column was used for analysis of opioid analgesics extracted from plasma samples using Agilent Bond Elut Certify. Published by Elsevier B. V.

Analytical methods for abused drugs in hair and their applications

Analytical and Bioanalytical Chemistry, **397**, 1039-1067 (2010)
Mitsuhiro Wada *et al.*

Tags
DB-5, DB-5ms, HP-5, HP-5ms, CP-Sil 5 CB, ZORBAX SB-Phenyl, ZORBAX Eclipse XDB-C18, Bond Elut Certify, forensics and toxicology, criminalistics

Abstract
A comprehensive review of drug extraction methods described the use of many Agilent products, including Bond Elut Certify for sample extraction, Agilent J&W DB-5, DB-5ms, HP-5, HP-5ms, and CP-Sil 5 CB GC columns, and Agilent ZORBAX StableBond SB-Phenyl and ZORBAX Eclipse XDB-C18 LC columns. Published by Springer.

Massive Intoxikation mit Doxylamin (in German)

T+K, **70**, 99-105 (2003)
F. Degel *et al.*

Tags
HP-5ms, forensics and toxicology, criminalistics

Abstract
The example of massive doxylamine intoxication shows that the often-practiced procedure of toxicological screening exclusively by immunochemical group testing may lead to serious misdiagnosis of unknown poisons. The cross-reactivity of the high doxylamine concentration false-positive result of the immunochemical test group, to tricyclic antidepressants, could direct the diagnosis in the wrong direction.

Design of experiments, a powerful tool for method development in forensic toxicology: application to the optimization of urinary morphine 3-glucuronide acid hydrolysis

Analytical and Bioanalytical Chemistry, **396**, 2533-2542 (2010)
S. Costa *et al.*

Tags
HP-5ms, 6890N GC, 5973 MSD, forensics and toxicology

Abstract
The authors used an Agilent J&W HP-ms GC column, in an Agilent GC system, to develop an application of the design of experiments to optimize method development in forensic toxicology using urinary morphine 3-glucuronide acid hydrolysis as an example. Published by Springer.

Materials testing and research

Chemical composition and antibacterial, antifungal and antioxidant activities of the flower oil of *Retama raetam* (Forssk.) Webb from Tunisia

Natural Product Research, **29**, 789-796 (2010)
Hayet Edziri *et al.*

Tags
HP-20M, HP-5, HP-5ms, HP-INNOWax, 5890 GC, materials testing and research, consumer products

Abstract
The chemical composition of the essential oils obtained by hydrodistillation from the flowers of *Retama raetam* (Forssk.) Webb cultivated in Tunisia was determined by GC and GC/MS analysis. A total of 50 components representing 98.58% of the oil were identified: nonanal (35.75%), α-humulene (29.29%), acetaldehyde (7.84%), linalool (5,62%), myrcene (3.38%), tridecanal (2.21%), β-caryophyllene (1.79%), α-terpinyl acetate (1.46%), terpinolene (1.26%) and methyl anthranilate (1.06%) were found to be the major components. The oil was evaluated for antibacterial and antifungal activities using a microdilution assay against some bacteria and yeasts. The minimal inhibitory concentrations (MIC) of the essential oil varied between 0.625 and 5 mg mL^{-1} and the minimum bactericidal concentrations (MBC) were superior to 5 mg mL^{-1} of oil for most strains. The antioxidant potential of the essential oil was evaluated using the 2,2′-diphenyl-1-picrylhydrazyl free radical scavenging method. The essential oil possesses good antioxidant properties (IC_{50} = 0.800 mg mL^{-1}). The results may suggest that the flower oil of *R. raetam* possesses compounds with antibacterial, antifungal and antioxidant capacities, and thus the oil can be explored as a natural preservative ingredient in food and/or pharmaceutical preparations.

Metabolomics

Gibberellin Metabolism and Transport During Germination and Young Seedling Growth of Pea (*Pisum sativum* L.)

Journal of Plant Growth Regulation, **31**, 235-252 (2012)
Belay T. Ayele *et al.*

Tags
Bond Elut C18, Bond Elut DEA, HP-5ms, metabolomics

Abstract
Plant hormones were first extracted using Agilent Bond Elut C18 and Bond Elut DEA SPE, separated by HPLC, and then analyzed using an Agilent J&W HP-5ms column fitted an Agilent GC/MS system. Published by Springer.

Proteomics and protein sciences

Nicotinamide-independent asymmetric bioreduction of C-double bond; length as m-dashC-bonds via disproportionation of enones catalyzed by enoate reductases

Tetrahedron, **66**, 663-667 (2012)
Clemens Stueckler *et al.*

Tags
CP-1301, HP-5ms, DB-1301, 7890A GC, 5975C MS, proteomics and protein sciences

Abstract
Agilent J&W GC columns and GC/MSD instruments were used in the study of a novel substrate-coupled C=C-bond bioreduction system. Published by Elsevier B. V.

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The Measure of Confidence

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