Agilent Technologies

Agilent J&W HP-5

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Clinical research

Evaluation of various derivatization approaches for gas chromatography–mass spectrometry analysis of buprenorphine and norbuprenorphine

Journal of Chromatography A, **1182**, 93-112 (2008)
C. H. Wu *et al.*

Tags
HP-5, clinical research, disease research

Abstract
Samples containing buprenorphine and derivatives were extracted using Agilent sample prep and analyzed by gas chromatography using an Agilent J&W HP-5 column. Published by Elsevier B. V.

An empirical study on the selection of analytes and corresponding cutoffs for immunoassay and GC–MS in a two-step test strategy—buprenorphine example

Analyst, **9**, 1848-1856 (2009)
Meng-Yan Wu *et al.*

Tags
HP-5, clinical research

Abstract
Standard solutions of buprenorphine (B) and three metabolites; (ii) immunoassay (IA) reagents designed for the analysis of B and/or its metabolites; and (iii) clinical urine specimens collected from patients (under B-treatment), constitute the B-System for fundamental study of parameters critical to the two-step test strategy, an analytical approach designed for a high-volume testing environment. The cross-reacting characteristics of IA reagents were examined using standard solutions of B and its metabolites. Resulting data were used as the basis for selecting target analytes suitable for the preliminary and the confirmatory test steps. Test data derived from IA and GC–MS analysis of clinical urine specimens (with natural distribution of B and its metabolites) were quantitatively correlated. Correlation parameters were examined: (i) to verify whether the analyte-pair targeted by the IA and GC–MS test steps has been properly selected; and (ii) to decide on appropriate cutoffs for the two test steps. In conclusion, this study has demonstrated that the most effective analyte(s) that should be targeted in the GC–MS determination step vary with the IA selected in the preliminary test step. All analytes that generate significant responses to the IA reagent should be targeted in the GC–MS test step. © The Royal Society of Chemistry 2009.

Energy and chemicals

Deacidification of *Pistacia chinensis* Oil as a promising non-edible feedstock for biodiesel production in China

Energies, **5**, 2759-2770 (2012)
Shenjun Qin *et al.*

Tags
HP-5, 6890N GC, 5973 MSD, energy and chemicals, biofuels and alternative energy

Abstract
Pistacia chinensis seed oil is proposed as a promising non-edible feedstock for biodiesel production. Different extraction methods were tested and compared to obtain crude oil from the seed of *Pistacia chinensis*, along with various deacidification measures of refined oil. The biodiesel was produced through catalysis of sodium hydroxide (NaOH) and potassium hydroxide (KOH). The results showed that the acid value of *Pistacia chinensis* oil was successfully reduced to 0.23 mg KOH/g when it was extracted using ethanol. Consequently, the biodiesel product gave a high yield beyond 96.0%. The transesterification catalysed by KOH was also more complete. Fourier transform infrared (FTIR) spectroscopy was used to monitor the transesterification reaction. Analyses by gas chromatography-mass spectrometry (GC-MS) and gas chromatography with a flame ionisation detector (GC-FID) certified that the *Pistacia chinensis* biodiesel mainly consisted of C_{18} fatty acid methyl esters (81.07%) with a high percentage of methyl oleate. Furthermore, the measured fuel properties of the biodiesel met the required standards for fuel use. In conclusion, the *Pistacia chinensis* biodiesel is a qualified and feasible substitute for fossil diesel.

Food testing and agriculture

A rapid multi-residue method for the determination of pesticide residues in choi sum, yardlong beans and aubergines

Food Chemistry, **131**, 611-616 (2012)
Lian-Kuet Chai *et al.*

Tags
Ultra 1, DB-1701, HP-5, 6890 GC, food testing and agriculture, pesticides

Abstract
In an investigation of pesticide residues in choi sum, yardlong beans and aubergines, an Agilent 6890 GC equipped with a Flame Photometric detector and Agilent J&W HP-5 and DB-1701 columns were used for the determination of organophosphate pesticides. The same instrument but with ECD and an Agilent J&W Ultra 1 column was used for the analysis of organochlorine and pyrethroid pesticides. Published by Elsevier B. V.

Rapid analysis of cyclamate in foods and beverages by gas chromatography-electron capture detector (GC-ECD)

Food Chemistry, **134**, 2424-2429 (2012)
Shengbing Yu *et al.*

Tags
HP-5, DB-5ms, DB-WAX, 6890N GC, 7683B Autosampler, food testing and agriculture, food processing and packaging

Abstract
Several Agilent J&W GC columns, fitted to an Agilent 6890N/5973 MSD, were used in a successful investigation of artificial sweeteners in food. Published by Elsevier B. V.

Quantitative Determination for the Major Volatile Organic Compounds of *Tuber melanosporum* Fermentation System by Distillation–solid-Phase Extraction–Gas Chromatography

Food Analytical Methods, **5**, 651-658 (2012)
Ya-Jie Tang *et al.*

Tags
HP-35, HP-5, DB-225, food testing and agriculture

Abstract
The major volatile organic compounds of truffle were analyzed using an Agilent J&W GC columns. Published by Springer.

Monitoring Study of Pesticide Residues in Cereals and Foodstuff from Poland

Polish Journal of Environmental Studies, **21**, 1703-1712 (2012)
B. Łozowicka *et al.*

Tags
HP-35, HP-5, 7890A GC, food testing and agriculture, pesticides

Abstract
After extraction from cereals, pesticides were analyzed on an Agilent J&W HP-5 GC column in an Agilent 6890 GC. Confirmation was obtained using an Agilent J&W DB-35 column.

[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 study on the lipid components of rice in relation to palatability and storage]

Journal of the Korean Society for Applied Biological Chemistry, **55**, 515-521 (2012)
Mi-Ra Yoon *et al.*

Tags
DB-225, HP-5, 6890 GC, 5973 MSD, food testing and agriculture, food processing and packaging

Abstract
The concentrations of squalene and phytosterols in stored rice were determined by GC/MS with an Agilent 6890/5973 MSD, equipped with Agilent J&W GC columns. Published by Springer.

[Development of a simple extraction and oxidation procedure for the residue analysis of imidacloprid and its metabolites in lettuce using gas chromatography]

Food Chemistry, **148**, 402-409 (2014)
Ah-Young Ko *et al.*

Tags
HP-5, HP-5ms UI, 7890A GC, 7683B Autosampler, 7000A Triple Quadrupole GC/MS, food testing and agriculture, pesticides

Abstract
The authors determined the total residues of imidacloprid and its metabolites (containing the 6-chloropicolyl moiety) in lettuce using GC-µECD and GC/MSD with Agilent J&W GC columns and in Agilent GC/MS instruments. Published by Elsevier B. V.

Forensics and toxicology

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.

Genomics

Stereoselective Reduction Of Some B-Ketoesters By Brassica Rapa And Daucus Carota Using Plant Roots And Plant Cultured Cells

International Journal of ChemTech Research, **5**, 1744-1749 (2013)
Katayoun Javidnia et al.

Tags
CP-Chirasil Dex CB, HP-5, genomics

Abstract
Biotransformation reactions were monitored by GC/MS in an Agilent 7890A equipped with an Agilent J&W HP-5 capillary column, whereas enantiomeric excess was determined by GC/FID analysis in an Agilent 6890N GC with an Agilent J&W CP-Chirasil-DEX CB column. Published by sphinxsai.com.

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.

Multicomponent analytical methodology to control phthalates, synthetic musks, fragrance allergens and preservatives in perfumes

Talanta, **85**, 370-379 (2011)
Lucia Sanchez-Prado *et al.*

Tags
VF-1701ms, HP-5 materials testing and research, consumer products

Abstract
The contents of 52 cosmetic ingredients belonging to different chemical families were determined in a single run. Using Agilent GC/MS instruments and Agilent J&W columns. Published by Elsevier B. V.

Small molecule pharmaceuticals

Rapid simultaneous determination of organochlorine and pyrethroid pesticide residues in *Lycium barbarum* L. using gas chromatography with electron-capture detector

Analytical Methods, **4**, 1132-1141 (2012)
Xiaohui Huang *et al.*

Tags
DB-1701, HP-5, Bond Elut Florisil, 7890A GC, small molecule pharmaceuticals, traditional medicines

Abstract
A fast gas chromatographic method for simultaneous determination of 50 organochlorine and pyrethroid pesticides in herbal medicine used Agilent J&W GC columns fitted to an Agilent 7890A GC with ECD. Published by Elsevier B. V.

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