Agilent Technologies

Agilent J&W DB-5ms

A collection of citations to advance your research

Table of contents

Environmental

Lipid biomarkers of Suspended Particulate Organic Matter in Lake Bled (NW Slovenia)

Geomicrobiological Journal, **30**, 291-301 (2013)
Marinka Gams Petrišič, Nives Ogrinc

Tags
DB-1ms, DB-5ms, 6890N GC, environmental, water analysis

Abstract
The fatty acid, hydrocarbon and sterol composition were used to investigate the organic sources and compositional changes in particulate organic matter (POM) and trap material in the water column in the deepest part of Lake Bled (NW Slovenia) in October 2006. Fatty acids distribution of algal origin were abundant in particles and trap material in epilimnion, while in anoxic zone POM and trap material were enriched in bacterial fatty acids (e.g. 16:1*n-7*, 18:1*n-7*, 18:1*n-9*, *iso*-C_{14}-C_{16} and *anteiso*-C_{15}). The lowest $\delta^{13}C$ value of –51.7‰ was observed in 18:1*n-7* FA in trap material and was the only FA which could be linked to methanotrophic bacteria. In addition Zooplankton left a marked imprint on particulate lipids and trap material at 12 m by predominance of *n*-$C_{18:0}$ over *n*-$C_{16:0}$ FA, short-chain, even-carbon *n*-alkenols, the high proportion of cholest-5-en-3β-ol (44.8% of total sterol concentration (TST)), cholesterol/phytosterol ratio of 0.49 and $\delta^{15}N_{PN}$ values of 6.8 and 11.7‰. It was shown that lacustrine phytoplankton biosynthesize 24-ethylcholest-5-en-3β-ol which is often used as a marker of terrigenous organic matter. Phytoplankton represented an important source of cholest-5-en-3β-ol and 24-methylcholest-5,22(E)-dien-3β-ol, while 24-ethylcholesta-5,22E-dien-3β-ol and 24-methylcholest-5-en-3β-ol were of terrestrial origin. There was an evidence of microbial transformation of Δ^5-stenols to 5α(H)-stanols in POM and trap material in hypolimnion.

Assessment of Sterol Oxidation in Oils Recovered from Exhausted Bleaching Earth by Coupled Capillary Column GC and GC–MS Methods

Journal of the American Oil Chemists' Society, **89**, 1427-1433 (2012)
Sarojini J. K. A. Ubhayasekera, Paresh C. Dutta

Tags
DB-35ms, DB-5ms, DB-17ms, 6890N GC, environmental, soil, sludges and sediments

Abstract
Sterol oxidation products were analyzed using Agilent J&W DB-35ms, DB-5ms, and DB-17ms on an Agilent 6890N GC. Published by Springer.

Dietary lipid quality affects temperature-mediated reaction norms of a freshwater key herbivore

Oecologia, **168**, 901-912 (2012)
Dominik Martin-Creuzburg *et al.*

Tags
DB-225ms, DB-5ms, 6890 GC, environmental, water analysis

Abstract
Lipids were analyzed by GC with an Agilent 6890 with a flame ionization detector (FID) and an Agilent J&W DB-225 column for FAME analysis and an Agilent J&W HP-5 column for sterol analysis. Published by Springer.

Automated Solid Phase Extraction and Quantitative Measurement of 2,3-Dibromo-1-Propanol in Urine Using Gas Chromatography-Mass Spectrometry

Archives of Environmental Contamination and Toxicology, **53**, 134-139 (2007)
G.K. Hemakanthi De Alwis, Larry L. Needham, Dana B. Barr

Tags
Bond Elut PPL, DB-5ms, 6890 GC, 7683 autosampler, 5973 MSD, environmental, emerging contaminants

Abstract
Agilent Bond Elut PPL performed best of all the SDVB methods tested. The authors provide their method, with relative recovery, precision intra/inter day, optimization and their reasons for choosing a non-polar SDVB for very polar compounds such as DBP and tris-BP. Published by Springer.

Determination of Dialkyl Phosphate Metabolites of Organophosphorus Pesticides in Human Urine by Automated Solid-Phase Extraction, Derivatization, and Gas Chromatography-Mass Spectrometry

Journal of Analytical Toxicology, **32**, 721-727 (2008)
G.K. Hemakanthi De Alwis, Larry L. Needham, Dana B. Barr

Tags
Bond Elut PPL, DB-5ms, 6890 GC, 7683 autosampler, 5973 MSD, environmental, water analysis

Abstract
In a continuation of prior work (De Alwis, Needham, and Barr, 2007), the authors optimized eluent conditions to ACN versus the initial diethyl ether, again using Agilent Bond EluPPI fro SPE and an Agilent J&W DB-5ms GC column. Published by OUP.

Identification of urinary metabolites in rats administered the fluorine-containing pyrethroids metofluthrin, profluthrin, and transfluthrin

Toxicological & Environmental Chemistry, **94**, 1789-1804 (2012)
Toshiaki Yoshida

Tags
VF-WAXms, DB-5ms, environmental, water analysis

Abstract
The major metabolites in urine of rats administered the fluorine-containing pyrethroids transfluthrin, profluthrin, and metofluthrin, which are used widely recently as mosquito repellents or mothproof repellents, were identified to establish biological indexes for evaluating the absorption amounts of these pyrethroids in the general population. A single dose of 300 mg kg^{-1} body weight of each pyrethroid was separately administered intraperitoneally to male Sprague-Dawley rats and urine samples were collected until 24 hours after the administration. The metabolites identified by gas chromatography-mass spectrometry were as follows: 2,3,5,6-tetrafluorobenzyl alcohol, 2,3,5,6-tetrafluorobenzoic acid, and 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylic acid (DCCA) for transfluthrin; 4-methyl-2,3,5,6-tetrafluorobenzyl alcohol, 4-methyl-2,3,5,6-tetrafluorobenzoic acid, 4-hydroxymethyl-2,3,5,6-tetrafluorobenzyl alcohol ($HOCH_2$–FB–Al), and 2,2-dimethyl-3-(1-propenyl)-cyclopropanecarboxylic acid (MCA) for profluthrin; 4-methoxymethyl-2,3,5,6-tetrafluorobenzyl alcohol, $HOCH_2$–FB–Al and MCA for metofluthrin. In addition, several compounds estimated to be metabolites were detected as follows: hydroxylated DCCA and its lactone for transfluthrin; 4-hydroxymethyl-2,3,5,6-tetrafluorobenzoic acid ($HOCH_2$–FB–Ac), hydroxylated MCA and its lactone for profluthrin; 4-methoxymethyl-2,3,5,6-tetrafluorobenzoic acid, $HOCH_2$–FB–Ac, hydroxylated MCA, and its lactone for metofluthrin. The pyrethroids administered underwent metabolic reactions such as ester hydrolysis and oxidation, and most of the metabolites were excreted as their conjugates into urine. These findings should be useful as basic data for evaluating the health effects of exposure to pyrethroids for the general population.

Food testing and agriculture

Identification and Behavioral Evaluation of Sex Pheromone Components of the Chinese Pine Caterpillar Moth, *Dendrolimus tabulaeformis*

PLoS ONE, **7** (2012)
Xiang-Bo Kong *et al.*

Tags
DB-5ms, DB-WAX, 7890 GC, food testing and agriculture, pesticides

Abstract
Sex pheromone was collected from calling female *D. tabulaeformis* by headspace solid phase microextraction (SPME) and by solvent extraction of pheromone glands. Extracts were analyzed by coupled gas chromatography/mass spectrometry (GC-MS) and coupled GC-electroantennographic detection (GC-EAD), using antennae from male moths. Five components from the extracts elicited antennal responses. These compounds were identified by a combination of retention indices, electron impact mass spectral matches, and derivatization as (*Z*)-5-dodecenyl acetate (*Z*5-12:OAc), (*Z*)-5-dodecenyl alcohol (*Z*5-12:OH), (5*Z*,7*E*)-5,7-dodecadien-1-yl acetate (*Z*5,*E*7-12:OAc), (5*Z*,7*E*)-5,7-dodecadien-1-yl propionate (*Z*5,*E*7-12:OPr), and (5*Z*,7*E*)-5,7-dodecadien-1-ol (*Z*5,*E*7-12:OH). Behavioral assays showed that male *D. tabulaeformis* strongly discriminated against incomplete and aberrant blend ratios. The correct ratio of *Z*5,*E*7-12:OAc, *Z*5,*E*7-12:OH, and *Z*5,*E*7-12:OPr was essential for optimal upwind flight and source contact. The two monoenes, *Z*5-12:OAc and *Z*5-12:OH, alone or binary mixtures, had no effect on behavioral responses when added to the optimal three-component blend.

Monitoring and risk assessment of pesticide residues in yuza fruits (*Citrus junos* Sieb. ex Tanaka) and yuza tea samples produced in Korea

Food Chemistry, **135**, 2930-2933 (2012)
Kwang-Geun Lee, Suk-Kyung Lee

Tags
DB-5, DB-5ms, ZORBAX Eclipse XDB, 6890N GC, 7683 Autosampler, food testing and agriculture, pesticides

Abstract
An optimized method was developed for the analysis of seven pesticides in yuza and yuza tea using Agilent J&W GC columns and an Agilent ZORBAX Eclipse XDB LC column. Published by Elsevier B. V.

Development and validation of a gas chromatography/mass spectrometry method for the simultaneous determination of melamine and cyromazine in animal feeds

Journal of Animal and Veterinary Advances, **10**, 73-80 (2011)
Binru Shang *et al.*

Tags
HP-INNOWax, DB-1701, DB-5ms, SampliQ SCX, 6890 Plus GC, 7683 Autosampler, 5973N MSD, food testing and agriculture, veterinary drugs

Abstract
A new method for simultaneous determination of melamine and cyromazine in animal feeds using Gas Chromatography-Mass Spectrometry (GC-MS) was developed and validated. Samples were extracted with trichloroacetic acid solution cleaned up by cation exchange solid-phase extraction cartridges and derivatized with N, O-bis (trimethylsilyl) trifluroacetamide containing 1% trimethylchlorosilane followed by GC separation and MS detection. The limits of quantification were 0.10 mg kg^{-1} for both melamine and cyromazine. Recoveries from feeds spiked at levels between 0.1 and 50 mg kg^{-1} ranged from 84.2-99.5% with Relative Standard Deviation (RSD) <8% with the exception of a 10.2% RSD for 0.1 mg kg^{-1} melamine. This validated method was successfully applied to commercial feed samples showing that it can be used as a routine tool for the surveillance and evaluation of the presence of melamine and cyromazine in animal feeds.

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.

Microbial Conversion of Arachidonic Acid to Arachidonyl Alcohol by a New *Acinetobacter* Species

Journal of the American Oil Chemical Society, **89**, 1663-1671 (2012)
Toshihiro Nagao *et al.*

Tags
DB-1ht, DB-23, DB-5ms, 6890N GC, food testing and agriculture, food processing and packaging

Abstract
The wax ester content in oil materials extracted from a microbial culture was analyzed using Agilent J&W GC columns fitted an Agilent 6890 GC. Published by Springer.

Screening for pesticide residues in oil seeds using solid-phase dispersion extraction and comprehensive two-dimensional gas chromatography time-of-flight mass spectrometry

Journal of Separation Science, **35**, 1634-1643 (2012)
Xiupin Wang *et al.*

Tags
DB-17ht, DB-5ms, food testing and agriculture, pesticides

Abstract
Agilent J&W GC columns were used in an assessment of pesticide residues in oilseeds. Published by Elsevier B. V.

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.

Determination of parent and substituted polycyclic aromatic hydrocarbons in high-fat salmon using a modified QuEChERS extraction, dispersive SPE and GC–MS

Journal of Agricultural and Food Chemistry, **59**, 8108-8116 (2011)
Norman D. Forsberg, Glenn R. Wilson, Kim A. Anderson

Tags
Bond Elut QuEChERS, SampliQ, DB-5ms, 5975B MSD, food testing and agriculture, persistent organic pollutants

Abstract
A fast and easy modified QuEChERS (quick, easy, cheap, rugged and safe) extraction method has been developed and validated for determination of 33 parent and substituted polycyclic aromatic hydrocarbons (PAHs) in high-fat smoked salmon that greatly enhances analyte recovery compared to traditional QuEChERS procedures. Sample processing includes extraction of PAHs into a solution of ethyl acetate, acetone and isooctane followed by cleanup with dispersive SPE and analysis by GC–MS in SIM mode. Method performance was assessed in spike recovery experiments (500 µg/g wet weight) in three commercially available smoked salmon with 3–11% fat. Recoveries of some 2-, 3- and 5-ring PAHs were improved 50–200% over traditional methods, while average recovery across all PAHs was improved 67%. Method precision was good with replicate extractions typically yielding relative standard deviations <10%, and detection limits were in the low ng/g range. With this method, a single analyst could extract and clean up ≥60 samples for PAH analysis in an 8 h work day. Reprinted with permission from the Journal of Agricultural and Food Chemistry.

Sampling and Analytical Methods of the National Status and Trends Program Mussel Watch Project: 1993-1996 Update

NOAA Technical Memorandum, NOS ORCA 130, 257 pp (1998)
G. G. Lauenstein, A. Y. Cantillo (eds)

Tags
CP-Sil 5/C18 CB for PCB, DB-17ht, DB-5, DB-5ms, ChromSpher PAH, 5880A GC, 5890 GC, food testing and agriculture, persistent organic pollutants

Abstract
Analyses undertaken during the mussels watch project made extensive use of Agilent instruments variously equipped with Agilent J&W GC columns or Agilent LC columns. Published by the US National Oceanic and Atmospheric Administration.

Direct analysis of intact glycidyl fatty acid esters in edible oils using gas chromatography–mass spectrometry

Journal of Chromatography A, **1313**, 202-211 (2013)
Herrald Steenbergen *et al.*

Tags
DB-5ms, CP-Sil 5 CB, Ultra Inert liner, Lichrosorb 5 Diol, 7890A GC, 5975C MSD, food testing and agriculture, food processing and packaging

Abstract
GC/MS analysis of glycidyl fatty acid esters in edible oils was accomplished using an Agilent J&W DB-5ms column fitted to an Agilent GC/MS system. An Agilent J&W CP-Sil 5 CB GC column was used to analyze the esters by GC/FID. Purification of the esters from the lipid matrix using normal phase LC with two Agilent Lichrosorb 5 Diol columns Published by Elsevier B. V.

Forensics and toxicology

Sensitive method for the detection of 22 benzodiazepines by gas chromatography-ion trap tandem mass spectrometry

Journal of Chromatography A, **954**, 235-245 (2002)
S. Pirnay *et al.*

Tags
DB-5ms, forensics and toxicology

Abstract
After liquid/liquid extraction of benzodiazepines from whole blood and urine, analysis was done using an Agilent J&W DB-5ms GC column. Published by Elsevier B. V.

Identification of 1-butyl-3-(1-(4-methyl)naphtoyl)indole detected for the first time in "herbal high" products on the Italian market

Forensic Science International, **223**, 42-46 (2012)
Ermanno Valoti *et al.*

Tags
VF-5ms, DB-5ms, 6890 GC, 5973 MSD, criminalistics, toxicology

Abstract
GC/FID and GC/MS analyses of a herbal drug was accomplished using Agilent J&W VF-5ms and DB-5ms columns in an Agilent 6890/5973 GC/ MSD. 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.

www.agilent.com/chem

Printed in the UK
23 September, 2014

5991-3012EN