ISSN 0021-9673

VOL. 560 NO. 1 MARCH 15, 1991

Bibliography Section

JOURNAL OF CHROMATOGRAPHY

INCLUDING ELECTROPHORESIS AND OTHER SEPARATION METHODS

ELSEVIER

JOURNAL OF CHROMATOGRAPHY

Scope. The *Journal of Chromatography* publishes papers on all aspects of chromatography, electrophoresis and related methods. Contributions consist mainly of research papers dealing with chromatographic theory, instrumental development and their applications. The section *Biomedical Applications*, which is under separate editorship, deals with the following aspects: developments in and applications of chromatographic and electrophoretic techniques related to clinical diagnosis or alterations during medical treatment; screening and profiling of body fluids or tissues with special reference to metabolic disorders; results from basic medical research with direct consequences in clinical practice; drug level monitoring and pharmacokinetic studies; clinical toxicology; analytical studies in occupational medicine.

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0021-9673/91/$03.50

Printed in The Netherlands

Chromatography and Modification of Nucleosides

Part C
Modified Nucleosides in Cancer and Normal Metabolism - Methods and Applications

Journal of Chromatography Library, 45C

edited by **C.W. Gehrke** *and* **K.C.T. Kuo**, *Department of Biochemistry, University of Missouri-Columbia, and Cancer Research Center, P.O. Box 1268, Columbia, MO, USA*

Chromatography and Modification of Nucleosides is a four-volume work which provides state-of-the-art chromatography and analytical methods for use in a wide spectrum of nucleic acid modification research.

The focus of Part A is the presentation of advanced methods for modification research on tRNAs, mRNAs, mtRNAs, tRNAs and DNAs. HPLC-UV, GC-MS, NMR, FT-IR and affinity chromatography approaches to nucleic acid modification studies are presented, as are nucleoside, oligonucleotide and nucleic acid isolation techniques. Part B has as its central theme the modified nucleosides of tRNA and the current analytical means for studying rRNA modifications. Modified nucleoside synthesis, function, structural conformation, biological regulation, and occurrence of modification in a wide range of tRNAs are presented, as is a chapter on DNA modification and a chapter on solid phase immunoassay for determining a particular modification.

The study of modified nucleosides in biological matrices (blood, urine) is the major thrust of Part C. As potential biological markers of disease, and for the insight that the modified nucleosides in fluids provide into the catabolism of the nucleic acids, a number of advanced methods for modified nucleoside isolation, separation, detection, characterization and measurement have been developed world-wide. Part C provides the reader with a comprehensive treatment of modified nucleosides as biochemical signals of neoplasia and normal metabolism. The final volume, Part D, will present structural characterization of unknown nucleosides as well as extensive biochemical, chemical and physical properties of RNA and DNA nucleosides, as a "database" for researchers in the field. Chromatographic methodology will be described for analysis of total modification of tRNAs and DNAs.

The chapters are written by leading scientists in their respective fields and present an up-to-date review on the roles of modified nucleosides in nucleic acids which will be extremely useful for workers in chromatography, molecular biology, genetics, biochemistry, biotechnology and the pharmaceutical industry.

Contents: Introduction. Early development of nucleoside markers for cancer *(T.P. Waalkes, C.W. Gehrke).* 1. Progress and future prospects of modified nucleosides as biological markers of cancer *(R.W. Zumwalt et al.).* 2. Ribonucleosides in biological fluids by a high-resolution quantitative RPLC-UV method *(K.C. Kuo et al.).* 3. Ribonucleosides in body fluids: On-line chromatographic cleanup and analysis by a column switching technique *(E. Schlimme, K. Siegfried-Boos).* 4. High-performance liquid chromatography of free nucleotides, nucleosides, and their bases in biological samples *(P.R. Brown, Y.-N. Kim).* 5. Isolation and characterization of modified nucleosides from human urines *(G.B. Chheda et al.).* 6. High performance liquid chromatography of modified nucleosides in human serum *(E.P. Mitchell et al.).* 7. Modified nucleosides in human blood serum as biochemical signals for neoplasia *(F. Salvatore et al.).* 8. Biochemical correlations between pseudouridine excretion and neoplasias *(F. Cimino et al.).* 9. High-performance liquid chromatography analysis of nucleosides and bases in mucosa tissues and urine of gastrointestinal cancer patients *(K. Nakano).* 10. Modified nucleosides as biochemical markers of asbestos exposure and AIDS *(O.K. Sharma, A. Fischbein).* 11. RNA catabolites in health and disease *(I. Clark et al.).* 12. Serum nucleoside chromatography for classification of lung cancer and controls *(J.E. McEntire et al.).* 13. Modified nucleosides and nucleobases in urine and serum as selective markers for the whole-body turnover of tRNA, rRNA, and mRNA-cap - Future prospects and impact *(G. Schöch et al.).* Combined Subject Index for Parts A, B and C.

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Computer-Assisted Method Development for High-Performance Liquid Chromatography

edited by J.L. Glajch *and* L.R. Snyder

(Spin-off from the Journal of Chromatography Vol. 485 plus an additional chapter, index and glossary)

This book deals with the use of the computer as an aid in selecting adequate or optimum conditions for a given analytical separation. Originally published as Volume 485 of the Journal of Chromatography, it has now been reprinted in book form, since the information is so useful that many chromatographers want a copy readily available in the lab.
An extensive Introduction is added to the book edition. This surveys the field and refers to the pages where particular items are discussed in the book. The addition of a Glossary of Terms, an Author Index and a Subject Index make this book an invaluable source of easily consulted information for the practising chromatographer.
For the purpose of this book, computer-assisted method development will be limited to specific procedures which are intended to be used with a computer - rather than their manually applied precursors. In that sense, the subject can be considered to have begun around 1980.
The ongoing, intense research activity into various forms of computer assisted HPLC method development provides the assurance that this approach can really assist the practical chromatographer working in an industrial laboratory.

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JOURNAL OF CHROMATOGRAPHY

VOL. 560 (1991)

JOURNAL of CHROMATOGRAPHY

INCLUDING ELECTROPHORESIS AND OTHER SEPARATION METHODS

ELSEVIER

AMSTERDAM — OXFORD — NEW YORK — TOKYO

J. Chromatogr., Vol. 560 (1991)

The *Bibliography Section 1991* will be published in two volumes (560 and 561) of two issues each. Combined indexes to both volumes will appear in the last issue of the year, Vol. 561, No. 2.

0021-9673/91/$03.50

Printed in The Netherlands

Editorial

As development is inherent to any evolving system, it is, perhaps, not surprising that our Bibliography Section must also occasionally undergo some changes. Beginning this year, the Bibliography Section will be published in two volumes per annum (Vols. 560 and 561). This will, we believe, make it more accessible. Because the various areas have changed in recent years, the individual entries can be more functionally classified and we have therefore introduced several minor changes into the classification scheme.

In the future, the classification scheme will always be included in the first issue of the first volume of the Bibliography Section in any particular year. On the other hand, the Indexes will appear only once per annum and will always form part of the last issue of the current year. We believe that most of our readers are interested in an annual survey of bibliographic data and this solution will therefore meet their demands. The sub-sections for individual entries will be preserved, according to the technique used, i.e. GC, LC, PC and ELPHO, as they have proven useful in the past.

Prague, January 1991 Z. Deyl, K. Macek

Brno, January 1991 J. Janák

CLASSIFICATION SCHEME FOR THE BIBLIOGRAPHY SECTION

Note, please, that there are considerable differences in subsections 1-4 in different techniques as these subsections deal with theory and technical aspects. Subsections 5 and beyond are identical for all different techniques.

LIQUID CHROMATOGRAPHY (LC)

1. Reviews and books
2. Fundamentals, theory and general
   - 2a. General
   - 2b. Thermodynamics and theoretical relationships
   - 2c. Relationship between structure and chromatographic behaviour
   - 2d. Measurement of physico-chemical and related values
3. General techniques
   - 3a. Apparatus and accessories
   - 3b. Detectors and detection reagents
   - 3c. Sorbents and columns, packing procedures
   - 3d. Quantitative analysis
   - 3e. Preparative scale chromatography
   - 3f. Programmed temperature, pressure, vapors, gradients
4. Special techniques
   - 4a. Automation
   - 4b. Computerization and modelling
   - 4c. Combination with other physico-chemical techniques (MS, IR etc.)
   - 4d. Affinity chromatography (advances)
   - 4e. Functional analysis
   - 4f. Trace analysis and preseparation techniques
   - 4g. Enantiomers, separation
   - 4h. Other special techniques

GAS CHROMATOGRAPHY (GC)

1. Reviews and books
2. Fundamentals, theory and general
   - 2a. General
   - 2b. Thermodynamics and theoretical relationships
   - 2c. Relationship between structure and chromatographic behaviour
   - 2d. Measurement of physico-chemical and related values
3. General techniques
   - 3a. Apparatus and accessories
   - 3b. Detectors and detection reagents
   - 3c. Sorbents and columns, packing procedures
   - 3d. Quantitative analysis
   - 3e. Preparative scale chromatography
   - 3f. Programmed temperature, pressure, vapors, gradients
4. Special techniques
   - 4a. Automation
   - 4b. Computerization and modelling
   - 4c. Combination with other physico-chemical techniques (MS, IR etc.)
   - 4d. Affinity chromatography (advances)
   - 4e. Functional analysis
   - 4f. Trace analysis and preseparation techniques
   - 4g. Enantiomers, separation
   - 4h. Other special techniques
   - 4i. Supercritical fluid chromatography

PLANAR CHROMATOGRAPHY (PC)

1. Reviews and books
2. Fundamentals, theory and general
   - 2a. General
   - 2b. Thermodynamics and theoretical relationships
   - 2c. Relationship between structure and chromatographic behaviour
   - 2d. Measurement of physico-chemical and related values
3. General techniques
   - 3a. Apparatus and accessories
   - 3b. Detectors and detection reagents
   - 3c. Sorbents and columns, packing procedures
   - 3d. Quantitative analysis
   - 3e. Preparative scale chromatography
   - 3f. Programmed temperature, pressure, vapors, gradients
   - 3g. High performance procedures
4. Special techniques
   - 4a. Automation
   - 4b. Computerization and modelling
   - 4c. Combination with other physico-chemical techniques (MS, IR etc.)
   - 4d. Affinity chromatography (advances)
   - 4e. Functional analysis
   - 4f. Trace analysis and preseparation techniques
   - 4g. Enantiomers, separation
   - 4h. Other special techniques

ELECTROPHORESIS (ELPHO)

1. Reviews and books
2. Fundamentals, theory and general
   - 2a. General
   - 2b. Thermodynamics and theoretical relationships
   - 2c. Relationship between structure and electrophoretic behaviour
   - 2d. Measurement of physico-chemical and related values
3. General techniques
   - 3a. Apparatus and accessories
   - 3b. Detectors and detection procedures
   - 3c. Stabilization media for electrophoresis
   - 3d. Quantitative analysis
   - 3e. Preparative scale electrophoresis
   - 3f. Programmed voltage and buffer gradients
4. Special techniques
   - 4a. Automation
   - 4b. Computerization and modelling
   - 4c. Combination with other physicochemical techniques, (MS, IR etc.)
   - 4d. Affinity electrophoresis
   - 4e. Capillary zone electrophoresis and electrokinetic chromatography
   - 4f. Isotachophoresis
   - 4g. Enantiomers, separation
   - 4h. Two dimensional electrophoresis
   - 4i. Other special techniques

SECTIONS COMMON TO ALL TECHNIQUES (LC, GC, PC and ELPHO)

For classification to sections 1-4 see individual techniques

5. Hydrocarbons and halogen derivatives
   - 5a. Aliphatic hydrocarbons
   - 5b. Cyclic hydrocarbons
   - 5c. Halogen derivatives
   - 5d. Complex hydrocarbon mixtures (incl. analysis of tars, bitumens and mineral oils)
6. Alcohols
7. Phenols
8. Substances containing heterocyclic oxygen
   - 8a. Flavonoids
   - 8b. Aflatoxins and other mycotoxins
   - 8c. Other compounds with heterocyclic oxygen (incl. tannins)
9. Oxo compounds, ethers, epoxides and quinones
10. Carbohydrates
    - 10a. Mono and oligosaccharides. Structural studies
    - 10b. Polysaccharides, mucopolysaccharides, lipopolysaccharides
    - 10c. Glycoproteins and their constituents
11. Organic acids and lipids
    - 11a. Organic acids and simple esters
    - 11b. Prostaglandins
    - 11c. Lipids and their constituents
    - 11d. Lipoproteins and their constituents
12. Organic peroxides
13. Steroids
    - 13a. General techniques
    - 13b. Pregnane and androstane derivatives
    - 13c. Estrogens
    - 13d. Sterols
    - 13e. Bile acids and alcohols
    - 13f. Ecdysones and other insect steroid hormones
    - 13g. Other steroids
14. Steroid glycosides and saponins
15. Terpenes and other volatile aromatic compounds
    - 15a. Terpenes
    - 15b. Essential oils
    - 15c. Bitter substances
16. Nitro and nitroso compounds
17. Amines, amides and related nitrogen compounds
    - 17a. Amines and polyamines
    - 17b. Catecholamines and their metabolites
    - 17c. Urea and guanidine derivatives
    - 17d. Other amine derivatives and amides (excl. peptides)
18. Amino acids and peptides; chemical structure of proteins
    - 18a. Amino acids and their derivatives
    - 18b. Peptides, peptidic and proteinous hormones, growth factors
    - 18c. Elucidation of structure of proteins and enzymes
19. Proteins
    - 19a. General techniques
    - 19b. Proteins of cells, viruses and subcellular particles
    - 19c. Proteins synthesized by genetic manipulation, monoclonal antibodies
    - 19d. Microbial and plant proteins

VOL. 560, NO. 1 JOURNAL OF CHROMATOGRAPHY MARCH 15, 1991

CONTENTS

Bibliography Section

Journal of Chromatography Library, Volume 45

Chromatography and Modification of Nucleosides

edited by **C.W. Gehrke** *and* **K.C.T. Kuo**, *Department of Biochemistry, University of Missouri-Columbia, and Cancer Research Center, P.O. Box 1268, Columbia, MO, U.S.A.*

Part A

Analytical Methods for Major and Modified Nucleosides - HPLC, GC, MS, NMR, UV and FT-IR

Chromatography and Modification of Nucleosides is a four-volume work which provides state-of-the-art chromatography and analytical methods for use in a wide spectrum of nucleic acid modification research.

The focus of Part A, is the presentation of advanced methods for modification research on tRNAs, mRNAs, mtRNAs, rRNAs and DNAs. HPLC-UV, GC-MS, NMR, FT-IR and affinity chromatography approaches to nucleic acid modification studies are presented, as are nucleoside, oligonucleotide and nucleic acid isolation techniques.

Contents: Introduction and Overview *(C.W. Gehrke, K.C. Kuo)*. 1. Ribonucleoside analysis by reversed-phase high performance liquid chromatography *(C.W. Gehrke, K.C. Kuo)*. 2. HPLC of transfer RNAs using ionic-hydrophobic mixed-mode and hydrophobic-interaction chromatography *(R. Bischoff, L.W. McLaughlin)*. 3. Nucleic acid chromatographic isolation and sequence methods *(G. Keith)*. 4. Affinity chromatography of mammalian tRNAs on immobilized elongation factor Tu from *Thermus thermophilus (M. Sprinzl, K.-H. Derwenskus)*. 5. Structural elucidation of nucleosides in nucleic acids *(C.W. Gehrke et al.)*. 6. Three dimensional dynamic structure of tRNAs by nuclear magnetic resonance spectroscopy *(P.F. Agris, H. Sierzputowska-Gracz)*. 7. Codon recognition: evaluation of the effects of modified bases in the anticodon loop of tRNA using the temperature-jump relaxation method *(H. Grosjean, C. Houssier)*. 8. High-performance liquid chromatography of Cap structures and nucleoside composition in mRNAs *(K.C. Kuo et al.)*. 9. Immunoassays for modified nucleosides of ribonucleic acids *(B.S. Vold)*. 10. Chromatography of synthetic and natural oligonucleotides *(H. Eckstein, H. Schott)*. Subject Index.

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Part B

Biological Roles and Function of Modification

Part B, the second of the four-volume work *Chromatography and Modification of Nucleosides*, has as its central theme the modified nucleosides of tRNA and the current analytical means for studying rRNA modifications. Modified nucleoside synthesis, function, structural conformation, biological regulation, and occurrence of modification in a wide range of tRNAs are presented, as is a chapter on DNA modification and a chapter on solid phase immunoassay for determining a particular modification.

The chapters are written by leading scientists in their respective fields and present an up-to-date review on the roles of modified nucleosides in nucleic acids which will be extremely useful for workers in chromatography, molecular biology, genetics, biochemistry, biotechnology and the pharmaceutical industry.

Contents: Introduction and Overview *(D.G. Söll)*. 1. Synthesis and function of modified nucleosides *(G.R. Björk, J. Kohli)*. 2. Biosynthesis and function of queuine and queuosine *(H. Kersten, W. Kersten)*. 3. Codon usage and Q-base modification in *Drosophila melanogaster (E. Kubli)*. 4. Solid phase immunoassay for determining the inosine content in transfer RNA *(E.F. Yamasaki, A.A. Wani, R.W. Trewyn)*. 5. Site directed replacement of nucleotides in the anticodon loop of tRNA: application to the study of inosine biosynthesis in yeast $tRNA^{Ala}$ *(K.A. Kretz, R.W. Trewyn, G. Keith, H. Grosjean)*. 6. tRNA and tRNA-like molecules: structural peculiarities and biological recognition *(R.L. Joshi, A.L. Haenni)*. 7. Mitochondrial tRNAs-structure, modified nucleosides and codon reading patterns *(G. Dirheimer, R.P. Martin)*. 8. The modified nucleotides in ribosomal RNA from man and other eukaryotes *(B.E.H. Maden)*. Modified uridines in the first positions of anticodons of tRNAs and mechanisms of codon recognition *(S. Yokoyama, T. Miyazawa)*. 10. Natural occurring modified nucleosides in DNA *(M. Ehrlich, X.Y. Zhang)*. Subject Index.

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- 32f. Cytostatics
- 32g. Other drug categories
- 32h. Toxicological and forensic applications
- 32i. Plant extracts

33. Clinico-chemical applications
    - 33a. General papers and reviews
    - 33b. Complex mixtures and profiling (single compounds by cross-reference only)
34. Food analysis
    - 34a. General papers and reviews
    - 34b. Complex mixtures (single compounds by cross-reference only)
    - 34c. Organoleptically important compounds (flavors, odors, volatiles)
35. Environmental analysis
    - 35a. General papers and reviews
    - 35b. Air pollution (complex mixtures; single compounds by cross-reference only)
    - 35c. Water pollution (complex mixtures; single compounds by cross-reference only)
    - 35d. Soil pollution (complex mixtures; single compounds by cross-reference only)
36. Some technical products and complex mixtures
    - 36a. Surfactants
    - 36b. Antioxidants and preservatives
    - 36c. Complex mixtures, technical products and unidentified compounds
37. Cells, cellular particles and supramolecular structures
38. Inorganic compounds
    - 38a. Cations
    - 38b. Anions
    - 38c. Permanent and rare gases
    - 38d. Volatile inorganic compounds
39. Radioactive and other isotope compounds

BIBLIOGRAPHY SECTION

SUPPLEMENT TO THE
JOURNAL OF CHROMATOGRAPHY
1991

Journal of Chromatography, 560 (1991) B1—B186

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Liquid Column Chromatography

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See also 18, 27, 30, 57, 69, 78, 81, 95, 98, 101, 103, 104, 139, 141, 169, 184, 188, 189, 190, 194, 198, 199, 200, 203, 208, 218, 220, 223, 226, 228, 291, 326, 408, 422, 439, 532, 535, 537, 538, 771, 857, 875, 941, 945, 946, 948, 950, 951, 952, 963, 968, 996, 1012, 1021, 1023, 1033, 1064, 1083, 1166.

2. FUNDAMENTALS, THEORY AND GENERAL

2a. General

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20. ENZYMES AND ENZYME ACTIVITY ESTIMATION

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21. PURINES, PYRIMIDINES, NUCLEIC ACIDS AND THEIR CONSTITUENTS

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23. OTHER SUBSTANCES CONTAINING HETEROCYCLIC NITROGEN

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Planar Chromatography

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19f. Structural and muscle proteins

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See 181.

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See 17.

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33. CLINICO-CHEMICAL APPLICATIONS

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See 54, 71, 113, 203.

34. FOOD ANALYSIS

34b. Complex mixtures (single compounds by cross-reference only)

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11d. Lipoproteins and their constituents

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21. PURINES, PYRIMIDINES, NUCLEIC ACIDS AND THEIR CONSTITUENTS

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21f. Complex mixtures of nucleic acids and their fragments

See 388.

22. ALKALOIDS

See 20, 45.

24. ORGANIC SULPHUR COMPOUNDS (INCL. GLUCOSINOLATES)

See 20.

25. ORGANIC PHOSPHORUS COMPOUNDS (INCL. SUGAR PHOSPHATES)

See 71, 334.

26. ORGANOMETALLIC AND RELATED COMPOUNDS

26a. Organometallic compounds

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See 460.

27. VITAMINS AND VARIOUS ANIMAL GROWTH FACTORS (NON-PEPTIDIC)

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See 45, 72.

32d. Central nervous system drugs

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33. CLINICO-CHEMICAL APPLICATIONS

33b. Complex mixtures and profiling (single compounds by cross-reference only)

See 101, 103, 107, 109, 111, 113, 117, 120, 124, 214, 227, 249, 287, 315, 331, 341, 417.

34. FOOD ANALYSIS

34b. Complex mixtures (single compounds by cross-reference only)

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See also 194.

36. SOME TECHNICAL PRODUCTS AND COMPLEX MIXTURES

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See 62.

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See also 36.

38d. Volatile inorganic compounds

See 120.

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Artificial Intelligence in Chemistry

Structure Elucidation and Simulation of Organic Reactions

by **Z. Hippe,** *Department of Physical and Computer Chemistry, I. Lukasiewicz Technical University, Rzeszów, Poland*

(Studies in Physical and Theoretical Chemistry, 73)

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ISBN 0-444-98746-0

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