

clinical chemistry



Journal of the American Association for Clinical Chemistry, Inc.

Editor

David E. Bruns
University of Virginia

Associate Editors

James C. Boyd
University of Virginia

Robert Rej
Wadsworth Center for
Labs. and Research
Albany, NY

Editor Emeritus

J. Stanton King

Board of Editors

Executive Committee:

Jack H. Ladenson, *Chairman*
Washington Univ. Sch. of Med.
St. Louis, MO

Carl A. Burtis, *Reviews Editor*
Oak Ridge Natl. Lab.
Oak Ridge, TN

Laurence M. Demers, *Editorials Editor*

Milton S. Hershey Med. Ctr.
Hershey, PA

Ronald J. Elin, *Book Reviews Editor*

Clinical Center, NIH
Bethesda, MD

George Klee, *Reviews Editor*
Mayo Clinic
Rochester, MN

Members:

John J. Albers
Univ. of Washington School of Med.
Seattle, WA

Nicholas M. Alexander
UCSD School of Med.
San Diego, CA

Thomas M. Annesley
Univ. of Michigan
Ann Arbor, MI

Fred S. Apple
Hennepin Co. Med. Ctr.
Minneapolis, MN

David N. Bailey
UCSD School of Med.
San Diego, CA

continued on next page

Second class postage paid at Washington, DC 20006 and additional mailing offices. Printed at 20th and Northampton Sts., Easton, PA 18042. POSTMASTER: send address changes to American Association for Clinical Chemistry, 2029 K St., NW, Washington, DC 20006.

Information for Authors appears in the January issue.

EDITORIALS

Quantifying Cadmium and Lead in Whole Blood

Douglas M. Templeton 1927

Prostate-Specific Antigen Comes of Age in Diagnosis and Management of Prostate Cancer

Howard C. B. Graves 1930

REVIEW

Serum Creatinine as an Index of Renal Function: New Insights into Old Concepts

Ronald D. Perrone, Nicolaos E. Madias, and Andrew S. Levey 1933

ARTICLES

Highly Sensitive, Specific Enzyme-Linked Immunosorbent Assay of Neopterin and Biopterin in Biological Samples

Shoji Ogiwara, Kazutoshi Kiuchi, Toshiharu Nagatsu, Ryo Teradaira, Ikuko Nagatsu, Keisuke Fujita, and Takashi Sugimoto 1954

Two-Site Direct Immunoassay Specific for Active Renin

Dominique Simon, Daniel J. Hartmann, Gabriel Badouaille, Gérald Caillot, Tahn-Tam Guyenne, Pierre Corvol, Bernard Pau, and Jean Marchand 1959

Direct, Simplified, and Sensitive Assay of Angiotensin II in Plasma Extracts Performed with a High-Affinity Monoclonal Antibody

Dominique Simon, Bernard Romestand, Huaming Huang, Gabriel Badouaille, Jean-Alain Fehrentz, Bernard Pau, Jean Marchand, and Pierre Corvol 1963

Avidin-Biotin Enzyme Immunoassay of Osteocalcin in Serum or Plasma

Jamal Jaouhari, Françoise Schiele, Sylviane Dragacci, Pierrette Tarallo, Jean-Pascal Siest, Joseph Henry, and Gérard Siest 1968

Sensitive, Specific Radioimmunoassay for Quantifying Pergolide in Plasma

Ronald R. Bowsher, John M. Apathy, Joyce A. Compton, Robert L. Wolen, Kenneth H. Carlson, and Karl A. DeSante 1975

Concentrations of Human Chorionic Gonadotropin, Its β -Subunit, and the Core Fragment of the β -Subunit in Serum and Urine of Men and Nonpregnant Women

Henrik Alifthan, Caj Haglund, Jan Dabek, and Ulf-Håkan Stenman 1981

Spectrotype Distributions of Circulating IgG from Patients with Systemic Lupus Erythematosus

Giorgio Barbi, Lynn B. Keil, Andrea D. Gaito, and Vincent A. DeBarì 1988

Direct Determination of Cadmium and Lead in Whole Blood by Potentiometric Stripping Analysis

Peter Ostapczuk 1995

Magnesium, Total Calcium, Phosphorus, Copper, and Zinc in Plasma and Erythrocytes of Venous Cord Blood from Infants of Diabetic Mothers: Comparison with a Reference Group by Logistic Discriminant Analysis

Michelle Speich, Arnaud Murat, Jean-Louis Auget, Bernard Bousquet, and Pierre Arnaud 2002

continued on next page

Board of Editors, cont.

Larry D. Bowers
Indiana Univ. Med. Ctr.
Indianapolis, IN

Gregory Buffone
Texas Children's Hosp.
Houston, TX

Daniel W. Chan
Johns Hopkins Hosp.
Baltimore, MD

John H. Eckfeldt
Univ. of Minnesota
Minneapolis, MN

Lawrence A. Kaplan
Bellevue Hosp. Center
New York, NY

Herbert K. Naito
VA Med. Ctr.
Cleveland, OH

Paul J. Orsulak
VA Med. Center
Dallas, TX

Eric J. Sampson
Centers for Disease Control
Atlanta, GA

Gerard Siest
Centre du Medicament
Nancy, France

Lawrence Silverman
NC Memorial Hosp.
Chapel Hill, NC

Steve Soldin
Children's Hosp. Natl. Med. Ctr.
Washington, DC

Raymond E. Vanderlinde
Hahnemann Univ.
Philadelphia, PA

Peter Wilding
Univ. of Pa. Hosp.
Philadelphia, PA

Editorial Office:

Manuscripts and reviews
Staff members, Charlottesville:

Gary Mawyer
Sandy Weaver
Laura O. Sutherland

Tel.: 1-804-979-7009

Fax: 1-804-979-7599

For regular mail: *Clinical Chemistry*, PO Box 3757,
Univ. Station, Charlottesville,
VA 22903-0757.

For express mail: Tower Office
Bld., Suite 609, 1224 W. Main
St., Charlottesville, VA 22903.

Production and Books for Review:

Copyediting and proofs
Staff members, Washington, DC:
Ruth Kulstad, Managing Editor
Virginia Shires Marcum, Direc-
tor of Editorial Development

Tel.: 1-202-857-0717

Fax: 1-202-833-4568
2029 K St., NW, 7th Floor
Washington, DC 20006

Business Office:

Subscriptions and reprints

Tel.: 1-800-892-1400

Fax: 1-202-887-5093

Telex: 251925 AACC UR
2029 K St., NW, 7th Floor
Washington, DC 20006

Analysis for Cerebrospinal Fluid Proteins by Sodium Dodecyl Sulfate-Polyacrylamide Gel Electrophoresis

Fumiko Mashige, Teruo Shimizu, Setsu Iijima, and Akiyuki Ohkubo 2008

Determination of Fetal Hemoglobin by Time-Resolved Immunofluorometric Assay

Ursula Turpeinen and Ulf-Håkan Stenman 2013

Precipitation and Characterization of an Aluminoillate from $AlCl_3-Na_2SiO_3-HCl$ in Serum, of Interest for Alzheimer Disease

Halka Bilinski, Laszlo Horvath, and Milica Trbojevic-Cepe 2019

Specific and Sensitive Measurement of FK506 and Its Metabolites in Blood and Urine of Liver-Graft Recipients

Uwe Christians, Felix Braun, Michael Schmidt, Norbert Kosian, Hans-Martin Schiebel, Ludger Ernst, Michael Winkler, Christiane Kruse, Annette Linck, and Karl-Friedrich Sewing 2025

Using Changes in Attributable Risk to Predict Long-Term Efficacy of Simvastatin Treatment

W. J. H. Vermaak, J. B. Ubbink, J. P. J. Ungerer, A. D. Marais, J. Firth, J. M. Van Lathem, and P. J. Becker 2033

Simultaneous Quadruple-Label Fluorometric Immunoassay of Thyroid-Stimulating Hormone, 17α -Hydroxyprogesterone, Immuno-reactive Trypsin, and Creatine Kinase MM Isoenzyme in Dried Blood Spots

Yong-Yuan Xu, Kim Pettersson, Kaj Blomberg, Ilkka Hemmilä, Heikki Mikola, and Timo Lövgren 2038

Evaluation of the Abbott IMx® Automated Immunoassay of Prostate-Specific Antigen

Robert L. Vessella, Jennifer Noteboom, and Paul H. Lange 2044

Homologous Radioimmunoassay of Human Osteocalcin

Roger Bouillon, Dirk Vanderschueren, Erik Van Herck, Henning K. Nielsen, Marie Bex, Walter Heyns, and Hugo Van Baelen 2055

Flow-Injection Analysis for Malondialdehyde in Plasma with the Thiobarbituric Acid Reaction

Hisayoshi Ikatsu, Tamie Nakajima, Ninzo Murayama, and Takashi Korenaga 2061

Improved Measurement of Low-Density-Lipoprotein Susceptibility to Copper-Induced Oxidation: Application of a Short Procedure for Isolating Low-Density Lipoprotein

Henne A. Kleinveid, Heidi L. M. Hak-Lemmers, Anton F. H. Stalenhoef, and Pierre N. M. Demacker 2066

Automated Assay of Vitamin B-12 by the Abbott IMx® Analyzer

Steven C. Kuemmerle, Gary L. Boltinghouse, Suzanne M. Delby, Teri L. Lane, and Royce P. Simonsen 2073

Transferrin Index: An Alternative Method for Calculating the Iron Saturation of Transferrin

John Beilby, John Olynyk, Simon Ching, Alex Prins, Nigel Swanson, William Reed, Hugh Harley, and Peter Garcia-Webb 2078

Automated Determination of Fluvoxamine in Plasma by Column-Switching High-Performance Liquid Chromatography

Sebastian Härtter, Hermann Wetzel, and Christoph Hiemke 2082

SCIENTIFIC NOTES

Serotonin Concentrations in Plasma and Variations during the Menstrual Cycle

Inge Hindberg and Ole Naesh 2087

Nonimmunological Assay of Urinary Albumin Based on Laser-Induced Fluorescence

Manfred A. Kessler, Michael R. Hubmann, Bernd A. Dremel, and Otto S. Wolfbeis 2089

Laboratory Evaluation of the Glucocard™ Blood Glucose Test Meter

Barry D. Lewis 2093

Axon™ Clinical Chemistry Analyzer Evaluated According to ECCLS Protocol

Sergio Brenna and Lorenzo Prncipe 2096

Two Novel Nonradioactive Polymerase Chain Reaction-Based Assays of Dried Blood Spots, Genomic DNA, or Whole Cells for Fast, Reliable Detection of Z and S Mutations in the α_1 -Antitrypsin Gene

Brago Storstein Andresen, Inga Knudsen, Peter K. A. Jensen, Kirsten Rasmussen, and Niels Gregersen 2100

Standardization with Synthetic 22-kDa Monomeric Human Growth Hormone Reduces Discrepancies between Two Monoclonal Immunoradiometric Assay Kits

Giuseppe Banfi, Marcello Marinelli, Marina Pontillo, and Pierangelo Bonini 2107

Subscriptions

Clinical Chemistry (ISSN 0009-9147) is published monthly by the American Association for Clinical Chemistry, Inc., 2029 K Street, NW, Washington, DC, 20006.

All subscriptions and circulation inquiries should be sent to the Business Office.

Individuals subscribe to *Clinical Chemistry*; rates per year: \$95 in US; \$110 in North America outside US; \$125 elsewhere. **Institutions** subscribe to *Clinical Chemistry Reference Edition*; rates per year: \$195 in US; \$210 in North America outside US; \$235 elsewhere.

Members domestic and foreign, \$55 (included in dues). Subscriptions are to be prepaid; payment should accompany the order.

Japanese yen price is available from our exclusive agent in Japan: USACO CORPORATION, 13-12, Shimbashi 1-chome, Minato-ku, Tokyo, 105 Japan. All subscriptions before Oct. 1 start with first issue of the current volume. Single copies of current and back-volume issues are \$8.00 (\$10.00 CCRE); ask for current prices on Special Issues. Microfilm/microfiche versions available by volume from University Microfilms International, 300 Veeb Rd., Ann Arbor, MI 48106; Contact UMI directly for prices. **Missing Copy** claims will not be allowed (a) unless we are notified no later than three months after the issue date for domestic and Canadian subscribers, six months after the issue date for foreign subscribers; (b) if notice of a recent change of address has not been received; or (c) if the reason for claim is "missing from files." To process claims, subscriber number and exact name and address of subscriber as they appear on mailing list must be referenced in correspondence.

For information about reprint orders (minimum order is 100 copies), call (800) 892-1400 or (202) 857-0717.

Advertising Inquiries should be sent to Scherago International, Inc., 11 Penn Plaza, Suite 1003, New York, NY 10001. TEL (212) 643-1750. FAX (212) 643-1757.



The contents of advertisements or articles in *Clinical Chemistry* are not to be construed as official statements, evaluations, or endorsements by the Board of Editors or the American Association for Clinical Chemistry, Inc. Copyright © 1992 The American Association for Clinical Chemistry, Inc.

Improving Lactate Analysis with the YSI 2300 GL: Hemolyzing Blood Samples Makes Results Comparable with Those for Deproteinized Whole Blood	Peter Foxdal, Yngve Bergqvist, Solveig Eckerbom, and Bo Sandhagen	2110
Cathepsin D Concentration in Breast Cancer Cytosols: Correlation with Disease-Free Interval and Overall Survival	M. J. Duffy, D. Reilly, J.-P. Brouillet, E. W. M. McDermott, C. Faul, N. O'Higgins, J. J. Fennelly, T. Maudelonde, and H. Rochefort	2114
Iohexol in Serum Determined by Capillary Electrophoresis	Z. K. Shihabi and M. S. Constantinescu	2117
Fluorometric Enzyme Immunoassay of Basic Fibroblast Growth Factor with Monoclonal Antibodies	Masayuki Kurobe, Akemi Kato, Yoshifumi Takei, and Kyoza Hayashi	2121
In Vitro Effects of Light on Serum Bilirubin Subfractions Measured by High-Performance Liquid Chromatography: Comparison with Four Routine Methods	Hiroshi Ihara, Hiroomi Nakamura, Yutaka Aoki, Tsugutoshi Aoki, and Mitsutaka Yoshida	2124
Superiority of Dynamic over Static Reference Intervals for Intact, Midmolecule, and C-Terminal Parathyrin in Evaluating Calcemic Disorders	Raymond Lepage, Serge Whittom, Sylvie Bertrand, Georges Bahsali, and Pierre D'Amour	2129
Concentrations and Molecular Forms of C-Type Natriuretic Peptide in Brain and Cerebrospinal Fluid	Kazuyoshi Togashi, Toru Kameya, Toshiro Kurosawa, Nobuhiro Hasegawa, and Masaya Kawakami	2136
Abbott IMx Evaluated for Assay of Prostate-Specific Antigen in Serum	Ann M. Dnistrian, Morton K. Schwartz, Carol A. Smith, Jerome S. Nisselbaum, and William R. Fair	2140

TECHNICAL BRIEFS

Concanavalin A-Immobilized Glycoprotein Antigen for Immunoaffinity Purification of Antiserum,	M. A. Peterson, N. K. Tanaka, and R. S. Swerdloff	2143
Intra-Individual Changes in Concentrations of Urinary Albumin, Serum Albumin, Creatinine, and Uric Acid during Normal Pregnancy	P. E. Helkjær, J. Holm, and L. Hemmingsen	2143
Identification and HPLC Analysis of an Impurity in Estriol 16α-Glucuronide	M. Adamczyk, Y. Chen, and J. Fishpaugh	2144

HISTORY

Water- and Salt-Loss Syndrome in Low-Weight Premature Infants: 40 Years Later	Samuel Natelson	2146
--	-----------------	-------------

LETTERS

Simple, Rapid Method for Determining Nitrates and Nitrites in Biological Fluids	S. I. Gutman and C. A. Hollywood	2152
Comments on Proficiency Testing	William Vine Royden Rand (Response) Norbert W. Tietz, Denis O. Rodgerson, and Ronald H. Laessig	2152
Detection of a T/C Polymorphism in the Porphobilinogen Deaminase Gene by Polymerase Chain Reaction Amplification of Specific Alleles	William E. Schreiber, Azim Jamani, and Bruce Ritchie	2153
Buflin and Unidentified Substance(s) in Traditional Chinese Medicine Cross-React in Commercial Digoxin Assay	N. S. Panesar	2155
Radioimmunoassay of Gastric Inhibitory Polypeptide in Plasma	Judith Wishart, Howard A. Morris, and Michael Horowitz	2156
Controversial Results by CA 125 Immunoradiometric Assay and Enzyme-Linked Immunosorbent Assay Not Due to Human Anti-Murine Antibody	G. Mustafa, C. Bieglmayer, A. Pohl, H. Kölbl, and F. Gabl	2157

continued on next page

Volume 38 Number 10
October 1992

**American Association for
Clinical Chemistry, Inc.**
1992 Officers

Basil R. Doumas, President
Lemuel Bowie,
President-Elect
Karen L. Nickel, Past President
Lawrence M. Killingsworth,
Secretary
Christopher S. Frings, Treasurer

1992 Board of Directors

K. Owen Ash
Mary F. Burritt
Laurence M. Demers
Thomas P. Moyer
Marc Walter
Peter Wilding

Commission on Publications
H. Peter Lehmann, Chairman

AACC National Office

Richard Flaherty, Executive Vice
President
Jerry Goldsmith, Vice President,
Marketing Programs
Chris Hoelzel, Director of Marketing
and Publications
Tina Edwards, Circulation Coordinator

Copyright Permission: Reprographic copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law is authorized for internal or personal use by the American Association for Clinical Chemistry, Inc., provided that the base fee of \$2.50 per copy is paid directly to the Copyright Clearance Center, 27 Congress Street, Salem, MA 01970. For those organizations that have been granted a photocopy license by CCC, a separate system of payment has been arranged. Fees may be subject to change. This consent does not extend to other kinds of copying, such as for general or external distribution, resale, advertising, or promotional purposes or for creating new collective works. For permission to reprint or to order reprints for purposes described in the previous sentence, contact the American Association for Clinical Chemistry, Inc., 2029 K Street, NW, Suite 700, Washington, DC 20006.

Indexing Services

Clinical Chemistry is covered by the major indexing and abstracting services, including the following: Index Medicus, MEDLINE, Current Contents/Life Sciences, Science Citation Index, SciSearch, Research Alert, Chemical Abstracts Service, Biological Abstracts, BIOSIS, Excerpta Medica/EMBASE, Reference Update, and Abstracts Express.

Printed on acid-free paper with organic-based ink.



Pitfalls in Measuring Lutropin by Two-Site Immunoassay with Monoclonal Antibodies against the Intact Molecule

Bruno Finco, Nicola Bizzaro, and Daniela Scomparin 2159

Effects of Intravenous Infusion of Ascorbate on Common Clinical Chemistry Tests

Tony C. Badrick and Bruce Campbell 2160

Reporting Cumulative Results Provides Precise Quality Control for Alpha-Fetoprotein Assays

Peadar McGing, Helen Forde, Pamela Hughes, Diarmuid UaConaill, and Desmond Carney 2160

Squamous Cell Carcinoma Antigen Immunoactivity is Normal in Maternal Serum but High and Increasing in Amniotic Fluid during Pregnancy

Leif Dibbelt, Rudolf Knuppen, and Andreas Bobrowski 2161

Determination and Assessment of the Stability of Phenylalanine and Tyrosine in Blood Spots by HPLC

Webster M. Madira, Felix Xavier, Jan Stern, A. Hervey Wilcox, and Jeffrey L. Barron 2162

THE CLINICAL CHEMIST

David E. Bruns 2164