

CLINICAL CHEMISTRY AND LABORATORY MEDICINE

Published in Association with the European Federation of Clinical Chemistry and Laboratory Medicine (EFLM)



CCLM is the official journal of the Association of Clinical Biochemists in Ireland (ACBI), the Austrian Society of Laboratory Medicine and Clinical Chemistry (ÖGLMKC), the German United Society for Clinical Chemistry and Laboratory Medicine (DGKL), the Hungarian Society of Laboratory Medicine (MLDT), the Italian Society of Clinical Biochemistry and Clinical Molecular Biology (SIBioC), the Slovenian Association for Clinical Chemistry (SZKK), and the Turkish Biochemical Society (TBD). *CCLM* is affiliated with the Australian Association of Clinical Biochemists (AACB) and the Royal Belgian Society of Laboratory Medicine (RBSLM).

EDITOR-IN-CHIEF

Mario Plebani
Padova, Italy

ASSOCIATE EDITORS

Giuseppe Lippi
Reviews Editor
Verona, Italy
Philippe Gillery
Reims, France
Karl J. Lackner
Mainz, Germany
Bohuslav Melichar
Olomouc, Czech Republic
Peter Schlattmann
Jena, Germany
Jill R. Tate
Brisbane, Australia
Gregory J. Tsongalis
Lebanon, USA

EFLM LIAISON

Ana-Maria Simundic
Zagreb, Croatia

EDITORIAL BOARD

Rossa Wai Kwun Chiu
Hong Kong, China
Eleftherios P. Diamandis
Toronto, Canada
Arnold von Eckardstein
Zurich, Switzerland
Rajiv T. Erasmus
Stellenbosch, South Africa
Emmanuel Favaloro
Westmead, Australia
Markus Herrmann
Bolzano, Italy
Johannes J.M.L. Hoffmann
Nuenen, Netherlands
Kiyoshi Ichihara
Ube, Japan
Berend Isermann
Magdeburg, Germany
Petr Jarolim
Boston, USA
János Kappelmayer
Debrecen, Hungary
Steven Kazmierczak
Portland, USA

Wolfgang Korte
St. Gallen, Switzerland
Christos Kroupis
Athens, Greece
Leslie Charles Lai
Kuala Lumpur, Malaysia
Sylvain Lehmann
Montpellier, France
Janja Marc
Ljubljana, Slovenia
David Meyre
Hamilton, Canada
Tomris Özben
Antalya, Turkey
Vladimir Palicka
Hradec Králové,
Czech Republic
Mauro Panteghini
Milan, Italy
Maria Pasic
Toronto, Canada
Geraldo Picheth
Curitiba, Brazil
Gérard Siest
Nancy, France

Grazyna Sygniewska
Bydgoszcz, Poland
Kannan Vaidynathan
Tiruvalla, India
Oswald Wagner
Vienna, Austria
Pierre Wallemacq
Brussels, Belgium
John B. Whitfield
Brisbane, Australia
Shengkai Yan
Beijing, China
Ian S. Young
Belfast, UK

MANAGING EDITOR

Heike Jahnke
Berlin, Germany

DE GRUYTER

ABSTRACTED/INDEXED IN Academic Search; Advanced Placement Source; Analytical Abstracts; Baidu Scholar; BIOBASE/CABS (Current Awareness in Biological Sciences); Biological Abstracts; BIOSIS Previews; CAB Abstracts; Celdes; Chemical Abstracts Service (CAS); Chemical Abstracts Service (CAS) - SciFinder; CNKI Scholar (China National Knowledge Infrastructure); CNPIEC; Current Contents/Life Sciences; Deep Indexing; Science Journals; Discovery Service (EBSCO); EMBASE; Gale/Cengage; Global Health; Google Scholar; ICAP Alcohol Information Databases; Illustrata: Natural Sciences; Illustrata: Technology; J-Gate; Journal Citation Reports/Science Edition; JournalTOCs; Materials Research Database; Medline; MegaFILE; Naviga (Softweco); Neurosciences Abstracts; Primo Central (ExLibris); Prous Science Integrity; PubMed; PubsHub; ReadCube; ResearchGate; Science Citation Index; Science Citation Index Expanded; Sciencescape; SCImago (SJR); SCOPUS; Summon (Serials Solutions/ProQuest); TDOne (TDNet); Technology Research Database; TEMA Technik und Management; TOC Premier; Ulrich's Periodicals Directory/ulrichsweb; WorldCat (OCLC).

CCLM is the official journal of the Association of Clinical Biochemists in Ireland (ACBI), the Austrian Society of Laboratory Medicine and Clinical Chemistry (ÖGLMKC), the German United Society for Clinical Chemistry and Laboratory Medicine (DGKL), the Hungarian Society of Laboratory Medicine (MLDT), the Italian Society of Clinical Biochemistry and Clinical Molecular Biology (SIBioC), the Slovenian Association for Clinical Chemistry (SZKK), and the Turkish Biochemical Society (TBD). *CCLM* is affiliated with the Australian Association of Clinical Biochemists (AACB) and the Royal Belgian Society of Laboratory Medicine (RBSLM).

The publisher, together with the authors and editors, has taken great pains to ensure that all information presented in this work (programs, applications, amounts, dosages, etc.) reflects the standard of knowledge at the time of publication. Despite careful manuscript preparation and proof correction, errors can nevertheless occur. Authors, editors and publisher disclaim all responsibility for any errors or omissions or liability for the results obtained from use of the information, or parts thereof, contained in this work.

The citation of registered names, trade names, trademarks, etc. in this work does not imply, even in the absence of a specific statement, that such names are exempt from laws and regulations protecting trademarks etc. and therefore free for general use.

ISSN 1434-6621 · e-ISSN 1437-4331 · CODEN CCLMFW

All information regarding notes for contributors, subscriptions, Open access, back volumes and orders is available online at www.degruyter.com/cclm.

RESPONSIBLE EDITOR(S) Prof. Dr. Mario Plebani, Università di Padova, Dipartimento di Medicina di Laboratorio, Azienda Ospedaliera di Padova, Via Nicolò Giustiniani 2, 35131 Padova, Italy. Tel.: +390 (0)49 821 2792, Fax: +390 (0)49 663 240, Email: mario.plebani@unipd.it

JOURNAL MANAGER Heike Jahnke, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany, Tel.: +49 (0)30 260 05 – 220, Fax: +49 (0)30 260 05 – 325, Email: heike.jahnke@degruyter.com

RESPONSIBLE FOR ADVERTISEMENTS Claudia Neumann, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany. Tel.: +49 (0)30 260 05-226, Fax: +49 (0) 30 260 05-264, Email: anzeigen@degruyter.com

© 2016 Walter de Gruyter GmbH, Berlin/Boston

TYPESETTING Compuscript Ltd., Shannon, Ireland

PRINTING Franz X. Stücker Druck und Verlag e.K., Ettenheim

Printed in Germany

COVER ILLUSTRATION Research lab © Eisenhans. Permission to use the image on the cover granted by Fotolia LLC.



Contents

Editorial

Carsten Stephan and Klaus Jung

The way of prostate cancer diagnostics — 373

Refers to article on pp 483

Review

Erika Arseneau and Cynthia M. Balion

Statistical methods used in the calculation of geriatric reference intervals: a systematic review — 377

Opinion Paper

Eleftherios P. Diamandis and Michelle Li

The side effects of translational omics: overtesting, overdiagnosis, overtreatment — 389

Genetics and Molecular Diagnostics

Qiuying Huang, Xudong Wang, Ning Tang, Chunjiang Zhu, Tizhen Yan, Ping Chen and Qingge Li

Rapid detection of non-deletional mutations causing α -thalassemia by multicolor melting curve analysis — 397

General Clinical Chemistry and Laboratory Medicine

Maja Hinge, Erik D. Lund, Ivan Brandslund, Torben Plesner and Jonna S. Madsen

Patient pools and the use of “patient means” are valuable tools in quality control illustrated by a bone-specific alkaline phosphatase assay — 403

Theresa Winter, Anne Greiser, Matthias Nauck and Astrid Petersmann

Long-term stability of glucose: 96-h study using Terumo Glycaemia tubes — 407

Gordana Juricic, Ana Bakliza, Andrea Saracevic, Lara Milevoj Kopcinovic, Sanja Dobrijevic, Sandra Drmic and Ana-Maria Simundic

Glucose is stable during prolonged storage in un-centrifuged Greiner tubes with liquid citrate buffer, but not in serum and NaF/KOx tubes — 411

Nora Nikolac, Ivana Celap, Petra Filipi, Marina Hemar, Marija Kocijancic, Marijana Miler, Ana-Maria Simundic, Vesna Supak Smolcic and Alen Vrtaric

Croatian laboratories have a good knowledge of the proper detection and management of hemolyzed, icteric and lipemic samples — 419

Xavier Joya, Emilia Marchei, Judith Salat-Batlle, Oscar García-Algar, Valeria Calvaresi, Roberta Pacifici and Simona Pichini

Fetal exposure to ethanol: relationship between ethyl glucuronide in maternal hair during pregnancy and ethyl glucuronide in neonatal meconium — 427

Henar Valbuena, Maria Shipkova, Sophie-Maria Kliesch, Simon Müller and Eberhard Wieland

Comparing the effect of isotopically labeled or structural analog internal standards on the performance of a LC-MS/MS method to determine ciclosporin A, everolimus, sirolimus and tacrolimus in whole blood — 437

Sivasankar Devanarayanan, Hanumanthappa Nandeesha, Shivanand Kattimani and Siddharth Sarkar

Relationship between matrix metalloproteinase-9 and oxidative stress in drug-free male schizophrenia: a case control study — 447

Florian Prüller, Andreas Münch, Astrid Preininger, Reinhard Bernd Raggam, Yvonne Grinschgl, Jakub Krumnikl, Wolfgang Toller, Hellfried Metzler, Elisabeth Mahla and Harald Mangge

Comparison of functional fibrinogen (FF/CFF) and FIBTEM in surgical patients – a retrospective study — 453

Reference Values and Biological Variations

John P. Campbell, Thijs M.H. Eijvogels, Yanyun Wang, Maria T.E. Hopman and Joannes F.M. Jacobs
Assessment of serum free light chain levels in healthy adults immediately after marathon running — 459

Judith Bellapart, Jason Alexander Roberts, Vinesh Appadurai, Steven C. Wallis, Maria Nuñez-Nuñez and Robert James Boots
Pharmacokinetics of a novel dosing regimen of oral melatonin in critically ill patients — 467

Cancer Diagnostics

Massimo Gion, Lucia Peloso, Chiara Trevisiol, Elisa Squarcina, Marco Zappa and Aline S.C. Fabricio
An epidemiology-based model as a tool to monitor the outbreak of inappropriateness in tumor marker requests: a national scale study — 473

Rianne J. Hendriks, Siebren Dijkstra, Sander A. Jannink, Martijn G. Steffens, Inge M. van Oort, Peter F.A. Mulders and Jack A. Schalken
Comparative analysis of prostate cancer specific biomarkers *PCA3* and *ERG* in whole urine, urinary sediments and exosomes — 483

Infectious Diseases

Gunnar Schalasta, Anna Börner, Andrea Speicher and Martin Enders
Comparative evaluation of the Aptima HIV-1 Quant Dx assay and COBAS TaqMan HIV-1 v2.0 assay using the Roche High Pure System for the quantification of HIV-1 RNA in plasma — 493

Dineo V. Phatlhane, Hayley Ipp, Rajiv T. Erasmus and Annalise E. Zemlin
Evaluating the use of procalcitonin in an asymptomatic, HIV-infected antiretroviral therapy-naïve, South African cohort — 501

Diabetes

Sébastien Thériault, Yves Giguère, Jacques Massé, Joël Girouard and Jean-Claude Forest
Early prediction of gestational diabetes: a practical model combining clinical and biochemical markers — 509

Online Only: Letters to the Editors

<http://www.degruyter.com/view/j/cclm.2016.54.issue-3/issue-files/cclm.2016.54.issue-3.xml>

Gianluigi Taverna, Lorenzo Tidu, Fabio Grizzi, Brian Stork, Alberto Mandressi, Mauro Seveso, Giorgio Bozzini, Paolo Sardella, Giuseppe Latorre, Giovanni Lughezzani, Nicolò Buffi, Paolo Casale, Girolamo Fiorini, Massimo Lazzeri and Giorgio Guazzoni
Highly-trained dogs' olfactory system for detecting biochemical recurrence following radical prostatectomy — e67

Dominika Szőke, Assunta Carnevale, Sara Pasqualetti, Federica Braga, Renata Paleari and Mauro Panteghini
More on the accuracy of the Architect enzymatic assay for hemoglobin A_{1c} and its traceability to the IFCC reference system — e71

Randie R. Little and Curt L. Rohlfing
Assessing quality from an accuracy-based HbA_{1c} proficiency survey — e75

Wan Ling Cheng, Siew Fong Neo, Suru Chew, Sunil Kumar Sethi and Tze Ping Loh
HbG-Honolulu interferes with some cation-exchange HPLC HbA_{1c} assays — e77

Nienke Geerts, Nick Wlazlo and Volkher Scharnhorst
Between analyser differences in chloride measurements and thus anion gap cause different interpretations of the acid-base balance — e81

José Antonio M. De Carvalho, Etiane Tatsch, Bruna S. Hausen, Sílvia W.K. Londero, Fabio V. Comim and Rafael N. Moresco
Non-albuminuric proteinuria: a urinary tubular marker in the diagnosis of diabetic kidney disease — e85

Erwin Kemna, Wilma Jentink, Irmgard te Molder and Ingeborg Straalman
International Normalized Ratio (INR) testing: analytical and clinical performance of four point-of-care devices versus central laboratory instrumentation analysis — e89

Wei-De Lin, Chung-Hsing Wang and Fuu-Jen Tsai
Genetic screening of the makorin ring finger 3 gene in girls with idiopathic central precocious puberty — e93

Matthijs Oyaert, Inger Brandt, Pieter Vermeersch,
Koenraad Desmet, Florent Vanstapel and Steven Pauwels
**Practical approach for medical validation of therapeutic
drug monitoring results — e97**

Christoph Robier, Manfred Neubauer and Gerhard Reicht
**Marked elevation of procalcitonin in a patient with a
drug related infusion reaction to rituximab — e101**