

Planta Medica

Journal of Medicinal Plant and Natural Product Research

Editors-in-Chief

Oliver Kayser, Dortmund, Germany
Robert FÜRst, Frankfurt, Germany

Editors

Alessandra Braca, Pisa, Italy
Elke Heiss, Vienna, Austria
Marek Murias, Poznan, Poland
Olivier Potterat, Basel, Switzerland
Jose-Luis Rios, Valencia, Spain
Supayang Piyawan Voravuthikunchai,
Hat Yai, Thailand

Editorial Office

René Prétôt, Muttentz, Switzerland

Honorary Advisory Board

Yoshinori Asakawa, Tokushima, Japan
Kurt Hostettmann, Geneva, Switzerland
Arnold Vlietinck, Antwerp, Belgium

Advisory Board

John Arnason, Ottawa, Canada
Anna-Rita Bilia, Florence, Italy
Mark Butler, S. Lucia, Australia
Angela Calderon, Auburn, AL, USA
Claus Cornett, Copenhagen, Denmark
Nunziatina De Tommasi, Salerno, Italy
Alberto Dias, Braga, Portugal
Stefan Gafner, Austin, TX, USA
Alfonso Garcia-Pineros, Frederick, MD, USA
Jürg Gertsch, Bern, Switzerland
De-an Guo, Shanghai, China
Andreas Hensel, Münster, Germany
Judit Hohmann, Szeged, Hungary
Ikhlas Khan, Oxford, MS, USA
Jinwoong Kim, Seoul, Korea
Anna Kiss, Warsaw, Poland
Wolfgang Kreis, Erlangen, Germany
Norberto Peporine Lopez, Ribeirão Preto,
Brasil
Matthias Melzig, Berlin, Germany
Eduardo Munoz, Cordoba, Spain
Nicolas H. Oberlies, Greensboro, NC, USA
Peter Proksch, Düsseldorf, Germany
Ping-Jyun Sung, Pingtung, Taiwan
Deniz Tasdemir, Kiel, Germany
Michał Tomczyk, Białystok, Poland
Heikki Vuorela, Helsinki, Finland
Jean-Luc Wolfender, Geneva, Switzerland
Yang Ye, Shanghai, China

Publishers

Georg Thieme Verlag KG
Stuttgart · New York
Rüdigerstraße 14
70469 Stuttgart
Postfach 30 11 20
70451 Stuttgart
Germany

Thieme Publishers
333 Seventh Avenue
New York, NY 10001, USA
www.thieme.com

Planta Medica

Volume 88

Planta Medica is published in 15 issues per year.

ISSN (Print): 0032-0943

eISSN: 1439-0221

Editors-in-Chief

Prof. Dr. Robert Fürst

Goethe Universität

Institut für Pharmazeut. Biologie

Geb. N230 / Raum 3.06

Max-von-Laue-Str. 9

60438 Frankfurt

Prof. Dr. Oliver Kayser

Emil-Figge-Str. 66

44227 Dortmund

Editorial Office

René Pretôt

School of Life Sciences FHNW

Institute for Chemistry and Bioanalytics

Büro 06.W.26

Hofackerstrasse 30, 4132 Muttenz, Switzerland

phone + 41 (0)6 12 28 56 04

rene.pretot@fhnw.ch

The editors are not responsible for the advertisements and supplements contained in the journal.

Publishers

Georg Thieme Verlag KG

Rüdigerstraße 14, 70469 Stuttgart or

P.O. Box 301120, 70451 Stuttgart

phone + 49-711-8931-0, fax + 49-711-8931-298

www.thieme.de/fz/plantamedica

Web-App: www.thieme.de/eref-app

Editorial staff at the Georg Thieme Verlag is available via:

planta.impressum@thieme.de

V.i.S.d.P.: Lea-Marie Held, Rüdigerstraße 14,

70469 Stuttgart

Advertising

Thieme Media

Pharmmedia Anzeigen- und Verlagsservice GmbH

Ulrike Bradler, Rüdigerstraße 14, 70469 Stuttgart or

P.O. Box 300880, 70448 Stuttgart

phone + 49-711-8931-466, fax + 49-711-8931-470

e-mail: ulrike.bradler@thieme-media.de

Production management

phone + 49-711-8931-683, fax + 49-711-8931-393

e-mail: Katharina.Lottemoser@thieme.de

Subscription information

Subscribers are asked to inform the publisher immediately in case of address changes in order to ensure correct delivery of the journal.

phone + 49-711-8931-321, fax: + 49-711-8931-422

customerservice@thieme.com

The scientific text of this journal is available online through

Thieme-connect, <http://www.thieme-connect.de>. Access to

Thieme-connect is free of charge for personal subscribers.

All subscription orders are entered for the calendar year.

The rate of subscription is invoiced in advance at the end of the year for the following year and becomes due for payment for the full calendar year. Subscriptions can be

started anytime. Subscriptions are automatically extended

each year unless notice of cancellation is received from the

subscriber prior to September 30 of each year (applies to

Germany, Switzerland, Austria only).

Planta Medica is available as an institutional subscription

only. For information about institutional rates, please

contact eproducts@thieme.com.

For information concerning licenses and prices for institutional access, please contact:

For customers in Germany, Austria, Switzerland

Thieme Gruppe, Institutional Sales, Rüdigerstraße 14

70469 Stuttgart, Deutschland

phone: + 49 711-8931-407, fax: + 49 711-8931-794

e-mail: esales@thieme.de

For customers in Europe (excluding Germany, Austria and Switzerland), Africa, Asia (excluding South Asia), Australia

Thieme Gruppe, Institutional Sales, Rüdigerstraße 14

70469 Stuttgart, Germany

phone: + 49 711-8931-407, fax: + 49 711-8931-794

e-mail: esales_row@thieme.de

For customers in the US, Canada, Mexico, Central and South America

Thieme Medical Publishers, Inc., Institutional Sales

333 Seventh Avenue, New York, NY 10001

United States

phone: + 1-800-782-3488 (Toll-free in US only)

phone: + 1-212-760-0888, fax: + 1-212-947-0108

e-mail: esales_tny@thieme.com

Airfreight and mailing in the USA by Sheridan Press, 450

Fame Avenue, Hanover, PA 17331. Periodicals postage

paid at New York, NY and additional mailing offices. Post-

master: Send address changes to European Journal of

Pediatric Surgery, Thieme Medical Publishers, Inc., 333

Seventh Avenue, New York, NY 10001.

For Users in the USA

Authorization of photocopy items for internal or personal

use, or the internal or personal use of specific

clients, is granted by Georg Thieme Verlag Stuttgart ·

New York for libraries and other users registered with

the Copyright Clearance Center (CCC) Transactional

Reporting Service; www.copyright.com. For reprint

information in the USA, please contact: journals@thieme.com.

Product names

Product names which are registered trademarks may not

have been specifically designated as such in every case.

In case where a product has been referred to by its regis-

tered trademark it cannot be concluded that the name

used is in the public domain. The same applies to labels,

names or other signs.

Manuscripts

Manuscript submission exclusively via:

<http://mc.manuscriptcentral.com/plamed>

For details regarding manuscript submission please refer

to "Instructions for Authors": [https://www.thieme.de/](https://www.thieme.de/de/planta-medica/140866.htm)

[de/planta-medica/140866.htm](https://www.thieme.de/de/planta-medica/140866.htm).

In principle only papers will be accepted which have not

been published previously, domestically or abroad. Fur-

thermore, manuscripts may not be offered to other pub-

lications at the same time as they are under con-

sideration for this journal.

The corresponding author will receive a PDF-file for private

use.

Authors may choose to allow, for a fee, free general access

to their papers online. For details, please contact

planta.impressum@thieme.de.

Illustrations

Unfortunately, we cannot accept images already published

in books, journals, or electronic products of other

publishers. The reason: It is almost impossible to obtain

the necessary rights of use even with payment of licens-

ing fees. Therefore, please do not pay any licensing fees

(e.g. to "RightsLink"/Copyright Clearance Center). Stan-

dard license contracts from "Creative Commons" are

unfortunately also insufficient for our purposes. Contact us with any questions regarding the use of images.

Important note

Medicine is an ever-changing science undergoing conti-

nual development. Research and clinical experience are

continually expanding our knowledge, in particular our

knowledge of appropriate treatment and drug therapy.

Insofar as this journal mentions any dosage or application,

readers may rest assured that the authors, editors and

publishers have made reasonable effort to ensure that

such references are in accordance with the state of know-

ledge at the time of production of the journal.

Nevertheless this does not involve, imply, or express any

guarantee or responsibility on the part of the publishers

in respect of any dosage instructions and forms of appli-

cation stated in the journal. Every user is requested to ex-

amine carefully the manufacturers' leaflets accompanying

each drug and to check, if necessary in consultation with a

physician or specialist, whether the dosage schedules

mentioned therein or the contraindications stated by the

manufacturers differ from the statements made in the

present journal. Such examination is particularly impor-

tant with drugs that are either rarely used or have been

newly released on the market. Every dosage schedule or

every form of application used is entirely at the user's

own risk and responsibility. The authors and publishers re-

quest every user to report to the publishers any discre-

pancies or inaccuracies noticed.

Copyright & Ownership

© 2022. Thieme. All rights reserved. The journal Planta

Medica is owned by Thieme. Georg Thieme Verlag KG,

Rüdigerstraße 14, 70469 Stuttgart, Germany

This journal, including all individual contributions and

illustrations published therein, is legally protected by

copyright for the duration of the copyright period. Any

use, exploitation or commercialization outside the

narrow limits set by copyright legislation, without the

publisher's consent, is illegal and liable to criminal

prosecution. This applies in particular to photocopy

reproduction, copyright, cyclostyling, mimeographing

or duplication of any kind, translating, preparation of

microfilms, and electronic data processing and storage

(CD-ROM, DVD, USB memory stick, databases, cloud-

based service, ebook and other forms of electronic pub-

lishing) as well as making it available to the public (e.g.,

internet, intranet or other wired or wireless data net-

works), in particular by displaying on stationary or

mobile visual display units, monitors, smart phones, tab-

lets or other devices by download (e.g., e-pub, PDF, App)

or retrieval in any other form.

Data protection

Where required by data protection laws, personal names

and other data are edited and either removed or pseudo-

onymized (alias names). This is always the case with pa-

tients, their relatives and friends, partly also with other

persons, e.g. those involved in the treatment of patients.

Appreciative and gender-inclusive language

Thieme rejects any use of language which discriminates

against people based on their origin, ethnicity, gender,

religion, social affiliation, disability or sexual preference.

Thieme addresses people of all gender identities equally.

We encourage our authors to use gender-neutral or gen-

der-equal expressions wherever the context allows.

Printed in Germany

Typesetting: Ziegler und Müller, text form files,

Kirchentellinsfurt

Printer: Grafisches Centrum Cuno GmbH & Co. KG, Calbe

(Saale)

Issue 1	(January 2022)	= Page	5	–	90
Issue 2	(February 2022)	= Page	97	–	178
Issue 3/4	(March 2022)	= Page	185	–	335
Issue 5	(April 2022)	= Page	341	–	415
Issue 6	(May 2022)	= Page	420	–	488
Issue 7	(June 2022)	= Page	492	–	572
Issue 8	(July 2022)	= Page	576	–	692
Issue 9/10	(August 2022)	= Page	696	–	857
Issue 11	(September 2022)	= Page	855	–	959
Issue 12	(October 2022)	= Page	964	–	1110
Issue 13	(October 2022)	= Page	1116	–	1262
Issue 14	(November 2022)	= Page	1267	–	1383
Issue 15	(December 2022)	= Page	1386	–	1586

Biological and Pharmacological Activity

- 729 Acero, Daniel, Firoz Shah Khan, Abraham J. Medina-Ortiz, Isabel Rivero-Cruz, Huzefa A. Raja, Laura Flores-Bocanegra, Carlos A. Fajardo-Hernández, Baojie Wan, Scott G. Franzblau, Shabnam Hematian, Mario Figueroa
New Terpenoids from the Corticioid Fungus *Punctularia atropurpurascens* and their Antimycobacterial Evaluation
- 237 Alasbahi, Rawiya H., Maria J. Groot
Ethnoveterinary Uses of Certain Yemeni Plants: A Review of the Scientific Evidence
- 429 Almeida, Alisson A., Graziela D. Lima, Marinês Eiterer, Laís A. Rodrigues, Juliana A. A. do Vale, Ana C. Zanatta, Gustavo C. Bressan, Leandro L. de Oliveira, João P. Leite
A Withanolide-rich Fraction of *Athenaea velutina* Induces Apoptosis and Cell Cycle Arrest in Melanoma B16F10 Cells
- 1069 Asai, Haruka, Koichi Kato, Moe Suzuki, Misato Takahashi, Erika Miyata, Moeka Aoi, Reika Kumazawa, Fumihiro Nagashima, Hiromasa Kurosaki, Yutaka Aoyagi, Nobuyuki Fukuishi
Potential Anti-allergic Effects of Bibenzyl Derivatives from Liverworts, *Radula perrottetii*
- 899 Bian, Huimiao, Yang Wang, Peng Wu, Na Han, Linlin Wang, Xue Li, Xianjing Zhang, Kenka Cho, Yongyu Zhang, Jun Yin, Baohong Jiang
Rosmarinic Acid Suppresses Abdominal Aortic Aneurysm Progression in Apolipoprotein E-deficient Mice
- 274 Bismarck, Doris, Jens Becker, Elisabeth Müller, Vera Becher, Lisa Nau, Philipp Mayer
Screening of Antimicrobial Activity of Essential Oils against Bovine Respiratory Pathogens – Focusing on *Pasteurella multocida*
- 664 Boeing, Thaise, Priscila de Souza, Luisa Mota da Silva, Arquimedes Gasparotto Junior
Herbal Medicines in the Treatment of Dyspepsia: An Overview
- 356 Cabral, Bárbara, Tays Amanda Gonçalves, Lucas Silva Abreu, Anderson Wilbur Andrade, Fátima de de Azevedo, Francker Duarte de Castro, Josean Fechine Tavares, Gerlane Coelho Guerra, Adriana Augusto de Rezende, Isac Almeida de Medeiros, Silvana Maria Zucolotto
Cardiovascular Effects Induced by Fruit Peels from *Passiflora edulis* in Hypertensive Rats and Fingerprint Analysis by HPLC-ESI-MSⁿ spectrometry
- 1060 Carreño-Campos, Christian, Jaime I. Arevalo-Villalobos, María Luisa Villarreal, Anabel Ortiz-Caltempa, Sergio Rosales-Mendoza
Establishment of the Carrot-Made LTB-Syn Antigen Cell Line in Shake Flask and Airlift Bioreactor Cultures
- 628 Chen, Chun, Ze-Feng Zhu, Wen-Xing Nie, Yong Zou
Suffrutines A and B Inhibit the Expression of Inflammatory Mediators in LPS-Induced RAW264.7 Cells by Suppressing the NF- κ B Signaling Pathway
- 735 Chun, Ji Hye, Melissa M. Henckel, Leslie A. Knaub, Sara E. Hull, Greg B. Pott, David G. Ramirez, Jane E.-B. Reusch, Amy C. Keller
(-)-Epicatechin Reverses Glucose Intolerance in Rats Housed at Thermoneutrality
- 341 de Assis, Ellen Lima, Felipe Dantas Silveira, Alan Victor da Ponte, Rômulo Rocha Regis
A Systematic Review of the Potential Effects of *Lippia sidoides* on Dental Plaque and Periodontal Diseases
- 548 Delijewski, Marcin, Khaled Radad, Christopher Krewenka, Barbara Kranner, Rudolf Moldzio
The Reassessed Impact of Nicotine against Neurotoxicity in Mesencephalic Dopaminergic Cell Cultures and Neuroblastoma N18TG2 Cells
- 1163 de Oliveira, Adriana da, Gabrielly Galdino Conrado, Nathalia Grazzia, Danilo Ciccone Miguel, Gilberto Carlos Franchi Júnior, Vera Lúcia Garcia
In Vitro Cytotoxic and Leishmanicidal Activity of Isolated and Semisynthetic ent-Pimaranes from *Aldama arenaria*
- 1123 de Oliveira, Diego Pinto, Eliana de Garcia, Mariana Assíria de Oliveira, Luiza C. Candido, Fernanda M. Coelho, Vivian Vasconcelos Costa, Nathália Vieira Batista, Celso Martins Queiroz-Junior, Larissa Froede Brito, Lirlândia Pires Sousa, Daniele G. Souza, Flávio Almeida Amaral, Rodrigo Maia de Pádua, Mauro Martins Teixeira, Fernão Castro Braga
cis-Aconitic Acid, a Constituent of *Echinodorus grandiflorus* Leaves, Inhibits Antigen-Induced Arthritis and Gout in Mice
- 324 Dieguez, Susana Nelly, Julieta María Decundo, Guadalupe Martínez, Fabián Andrés Amanto, Carolina Paula Bianchi, Denisa Soledad Pérez Gaudio, Alejandro Luis Soraci
Effect of Dietary Oregano (*Lippia organoides*) and Clover (*Eugenia caryophyllata*) Essential Oils' Formulations on Intestinal Health and Performance of Pigs
- 1287 Dissanayake, Amila Abishake, Kambou Georges, Muraleedharan Gopalan Nair
Cyclooxygenase Enzyme and Lipid Peroxidation Inhibitory Terpenoids and Steroidal compounds as Major Constituents in *Cleome viscosa* Leaves
- 913 Do, Kiep Minh, Min-Kyoung Shin, Takeshi Kodama, Nwet Nwet Win, Prema Prema, Hien Minh Nguyen, Yoshihiro Hayakawa, Hiroyuki Morita
Flavanols and Flavanes from *Crinum asiaticum* and Their Effects on LPS Signaling Pathway Through the Inhibition of NF- κ B Activation
- 933 Du, Huan, Tong Xu, Huan Yi, Xinmei Xu, Chengcheng Zhao, Yiman Ge, Chuantao Zhang, Gang Fan
Effect of Gut Microbiota on the Metabolism of Chemical Constituents of *Berberis kansuensis* Extract Based on UHPLC-Orbitrap-MS Technique
- 762 D'Angiolo, Michele, Marinella De Leo, Fabiano Camangi, Giorgia Magliocca, Nunziatina De Tommasi, Alessandra Braca, Stefania Marzocco
Chemical Constituents of *Ulmus minor* subsp. *minor* Fruits Used in the Italian Phytoalimurgic Tradition and Their Anti-inflammatory Activity Evaluation

- 380 Erdenetsogt, Uugangerel, Suvd Nadmid, Christian Paetz, Hans-Martin Dahse, Kerstin Voigt, Chojjamts Gotov, Wilhelm Boland, Enkhmaa Dagvadorj
New Guaianolide Sesquiterpene Lactones and Other Constituents from *Pyrethrum pulchrum*
- 200 Farinacci, Patricia, Meike Mevissen, Hannah Ayrle, Veronika Maurer, Tina Sørensen Dalgaard, Matthias F. Melzig, Michael Walkenhorst
Medicinal Plants for Prophylaxis and Therapy of Common Infectious Diseases In Poultry—A Systematic Review of In Vivo Studies
- 921 Feng, Xinchu, Kun Wang, Shijie Cao, Liqin Ding, Feng Qiu
Pharmacokinetics of Five Alkaloids and their Metabolites in Normal and Diabetic Rats after Oral Administration of *Rhizoma coptidis*
- 1293 Gao, Ying, Ruihua Mao, Ye Liu, Ming Zhou, Hanli Ruan
Cytochalasan Alkaloids as TRAIL Sensitizers from an Endophytic Fungus *Chaetomium* sp.
- 53 Guzmán-Gutiérrez, Silvia Laura, Mayra Silva-Miranda, Felix Krengel, Elizabeth Huerta-Salazar, Mayra León-Santiago, Jessica Karina Díaz-Cantón, Clara Espitia Pinzón, Ricardo Reyes-Chilpa
Antimycobacterial Activity of Alkaloids and Extracts from *Tabernaemontana alba* and *T. arborea*
- 639 Hake, Alexander, Nico Symma, Stefan Esch, Andreas Hensel, Martina Düfer
Alkaloids from Lime Flower (*Tiliae flos*) Exert Spasmodic Activity on Murine Airway Smooth Muscle Involving Acetylcholinesterase
- 187 Huffman, Michael A.
Folklore, Animal Self-Medication, and Phytotherapy—Something Old, Something New, Something Borrowed, Some Things True
- 650 Ibrahim, Kasimu Ghandi, Kehinde Ahmad Adeshina, Muhammad Bashir Bello, Ibrahim Malami, Bilyaminu Abubakar, Murtala Bello Abubakar, Mustapha Umar Imam
Prophylactic Use of Natural Products against Developmentally Programmed Metabolic Syndrome
- 313 Jambwa, Prosper, Simbarashe Katsande, Gift Matope, Lyndy J. McGaw
Ethnoveterinary Remedies Used in Avian Complementary Medicine in Selected Communal Areas in Zimbabwe
- 891 Jóhannsson, Freyr, Paulina Cherek, Maonian Xu, Óttar Rolfsson, Helga M. Ögmundsdóttir
The Anti-Proliferative Lichen-Compound Protolichesterinic Acid Inhibits Oxidative Phosphorylation and Is Processed via the Mercapturic Pathway in Cancer Cells
- 1267 Jordan, Erin, Gia-Nam Nguyen, Alexander Piechot, Oliver Kayser
Cannabinoids as New Drug Candidates for the Treatment of Glaucoma
- 783 Karampetsou, Kalliopi, Olga S. Koutsoni, Fotis Badounas, Apostolis Angelis, Georgia Gogou, Leandros-Alexios Skaltsounis, Maria Halabalaki, Eleni Dotsika
Exploring the Immunotherapeutic Potential of Oleocanthal against Murine Cutaneous Leishmaniasis
- 794 Kirchweber, Benjamin, Andreas Wasilewicz, Katrin Fischhuber, Ammar Tahir, Ya Chen, Elke H. Heiss, Thierry Langer, Johannes Kirchmair, Judith M. Rollinger
In Silico and In Vitro Approach to Assess Direct Allosteric AMPK Activators from Nature
- 604 Krol, Agata, Adam Kokotkiewicz, Maria Luczkiewicz
White Sage (*Salvia apiana*)—a Ritual and Medicinal Plant of the Chaparral: Plant Characteristics in Comparison with Other *Salvia* Species
- 1190 Lang, Li-Juan, Min Wang, Chang Lei, Yi Shen, Qi-Jie Zhu, Hong-Mei Diao, Hao Chen, Lei Shen, Xiang Dong, Bei Jiang, Chao-Jiang Xiao
Phloridzin Highly Accumulated in *Malus rockii* Rehder and Its Structure Revision and Hypolipidemic Activity
- 218 Latek, Urszula, Magdalena Chłopecka, Wojciech Karlik, Marta Mendel
Phytogenic Compounds for Enhancing Intestinal Barrier Function in Poultry—A Review
- 678 Lei, Chun, Ya-Nan Li, Jia-Nan Li, Yu-Bo Zhou, Ming-Jun Cui, Kai-Cong Fu, Jia Li, Ai-Jun Hou
Two New Cytotoxic Maytansinoids Targeting Tubulin from *Trewia nudiflora*
- 1004 Lu, Zhengfei, Sara M. Handy, Ning Zhang, Zheng Quan, Qun Xu, Michael Ambrose, Gabriel Giancaspro, Nandakumara D. Sarma
Development and Validation of a Species-specific PCR Method for the Identification of Ginseng Species Using Orthogonal Approaches
- 1078 Miller, Neil, Elizabeth Joubert
Critical Assessment of In Vitro Screening of α -Glucosidase Inhibitors from Plants with Acarbose as a Reference Standard
- 1141 Nguyen, Thi Thu, Zhao Qu, Van Tuyen Nguyen, Thanh Tra Nguyen, Thi Tu Le, Sibao Chen, Son The Ninh
Natural Prenylated Xanthenes as Potential Inhibitors of PI3k/Akt/mTOR Pathway in Triple Negative Breast Cancer Cells
- 774 Niveditha, Lekshmi, Peng Fu, Tiago F. Leao, Te Li, Tingting Wang, Remington X. Poulin, Lorena R. Gaspar, C. Benjamin Naman, Sajeevan Thavarool Puthiyedathu
Targeted Isolation of Two New Anti-inflammatory and UV-A Protective Dipyrrroloquinones from the Sponge-associated Fungus *Aspergillus tamarii* MCCF102
- 292 Ouachinou, Jérôme Marie-Ange, Gbèwonmèdèa Hospice Dassou, Alidehou Jerrold Agbankpé, Yaya Alain Koudoro, Pascal Agbangnan, Noelia Hidalgo Triana, Gnimansou Abraham Favi, Donald Djidohokpin, Aristide Cossi Adomou
Variation of Secondary Metabolite Contents and Activities against Bovine Diarrheal Pathogens among *Zygophyllaceae* Species in Benin and Implications for Conservation
- 1116 Park, Gil-Sun, Bokyoung Park, Mi-Young Lee
Berberine Induces Autophagic Cell Death by Inactivating the Akt/mTOR Signaling Pathway
- 753 Pelzer, Chantal V., Joëlle Houriet, William J. Crandall, Daniel A. Todd, Nadja B. Cech, Derick D. Jones
More Than Just a Weed: An Exploration of the Antimicrobial Activity of *Rumex crispus* using a Multivariate Data Analysis Approach
- 1299 Peng, Xiaogang, Qianxi Ouyang, Jiao Pei, Jinling Chang, Chunlun Qin, Hanli Ruan
TRAIL-sensitizing Cytochalasins from the Endophytic Fungus *Phoma multirostrata*
- 1047 Pitakbut, Thanet, Gia-Nam Nguyen, Oliver Kayser
Activity of THC, CBD, and CBN on Human ACE2 and SARS-CoV1/2 Main Protease to Understand Antiviral Defense Mechanism
- 1275 Politi, Matteo, Giorgia Tresca, Luigi Menghini, Claudio Ferrante
Beyond the Psychoactive Effects of Ayahuasca: Cultural and Pharmacological Relevance of Its Emetic and Purgative Properties

- 254 Popowski, Dominik, Jürgen Zentek, Jakub P. Piwowarski, Sebastian Granica
Gut Microbiota of Pigs Metabolizes Extracts of *Filipendula ulmaria* and *Orthosiphon aristatus*—Herbal Remedies Used in Urinary Tract Disorders
- 163 Pradubiyat, Nalinee, Athina Giannoudis, Taha Elmetwali, Panupong Mahalapbutr, Carlo Palmieri, Chalermchai Mitrpant, Wannarasma Ketchart
1'-Acetoxychavicol Acetate from *Alpinia galanga* Represses Proliferation and Invasion, and Induces Apoptosis via HER2-signaling in Endocrine-Resistant Breast Cancer Cells
- 300 Prokop, Désirée, Joachim Spergser, Werner Hagmüller, Alexander Tichy, Karin Zitterl-Eglseer
Efficacy of Norway Spruce Ointments and Bacterial and Fungal Alterations in the Treatment of Castration Wounds in Piglets
- 507 Qian, Jianchang, Yinghui Li, Xiaodan Zhang, Daoxing Chen, Mingming Han, Tao Xu, Bingbing Chen, Guoxin Hu, Junwei Li
Herbacetin Broadly Blocks the Activities of CYP450s by Different Inhibitory Mechanisms
- 9 Rashed, Zeinab El, Elena Grasselli, Hala Khalifeh, Laura Canesi, Ilaria Demori
Brown-Algae Polysaccharides as Active Constituents against Nonalcoholic Fatty Liver Disease
- 587 Reichling, Jürgen
Antiviral and Virucidal Properties of Essential Oils and Isolated Compounds – A Scientific Approach
- 702 Rivera-Chávez, José, Corina-Diana Ceapă, Mario Figueroa
Biological Dark Matter Exploration using Data Mining for the Discovery of Antimicrobial Natural Products
- 527 Saetang, Jirakrit, Aman Tedasen, Surasak Sangkhathat, Natnaree Sangkaew, Sirinapa Dokduang, Napat Prompat, Siriporn Taraporn, Potchanapond Graidist
Low Piperine Fractional Piper *nigrum* Extract Enhanced the Antitumor Immunity via Regulating the Th1/Th2/Treg Cell Subsets on NMU-Induced Tumorigenesis Rats
- 745 Sarfare, Satish, Shabana I. Khan, Fazila Zulfiqar, Srivedavyasari Radhakrishnan, Zulfiqar Ali, Ikhlas A. Khan
Undescribed C-Glycosylflavones from Corn Silk and Potential Anti-inflammatory Activity Evaluation of Isolates
- 152 Schäfer, Anima M., Pierrine M. Gilgen, Clara Spirgi, Olivier Potterat, Henriette E. Meyer zu Schwabedissen
Constituents of *Passiflora incarnata*, but Not of *Valeriana officinalis*, Interact with the Organic Anion Transporting Polypeptides (OATP)2B1 and OATP1A2
- 262 Schott, Theresa, Nicole Reisinger, Klaus Teichmann, Jürgen König, Andrea Ladinig, Elisabeth Mayer
Establishment of an In Vitro Co-Culture Model of the Piglet Gut to Study Inflammatory Response and Barrier Integrity
- 367 Shasaltaneh, Marzieh Dehghan, Nasser Naghdi, Sadrollah Ramezani, Leila Alizadeh, Gholam Hossein Riaz
Protection of Beta Boswellic Acid against Streptozotocin-induced Alzheimer's Model by Reduction of Tau Phosphorylation Level and Enhancement of Reelin Expression
- 1020 Sirotkin, Alexander V.
The Influence of Turmeric and Curcumin on Female Reproductive Processes
- 62 Smit, Sybrand Engelbrecht, Claudine Manirafasha, Erna Marais, Rabia Johnson, Barbara Huisamen
Cardioprotective Function of Green Rooibos (*Aspalathus linearis*) Extract Supplementation in Ex Vivo Ischemic Prediabetic Rat Hearts
- 721 Song, Hongzhi, Jinni Tan, Ruijing Ma, Edward J Kennelly, Qingang Tan
Anti-inflammatory Constituents from *Caulis Trachelospermi*
- 1036 Spiess, Deborah, Moritz Winker, Antoine Chauveau, Vanessa Fabienne Abegg, Olivier Potterat, Matthias Hamburger, Carsten Gründemann, Ana Paula Simões-Wüst
Medicinal Plants for the Treatment of Mental Diseases in Pregnancy: An In Vitro Safety Assessment
- 698 Still, Patrick, Wen Chen, Wendy Weber, D. Craig Hopp
NCCIH Priorities for Natural Products Research
- 1311 Su, Dan, Jian Luo, Junqi Ge, Yali Liu, Chen Jin, Pengfei Xu, Ruowen Zhang, Genhua Zhu, Ming Yang, Zhifu Ai, Yonggui Song
Raw and Wine Processed *Schisandra chinensis* Regulate NREM-Sleep and Alleviate Cardiovascular Dysfunction Associated with Insomnia by Modulating HPA Axis
- 1026 Takenokuchi, Mariko, Kinuyo Matsumoto, Yuko Nitta, Rumi Takasugi, Yukari Inoue, Michi Iwai, Keiichi Kadoyama, Kazutoshi Yoshida, Hiromi Takano-Ohmuro, Taizo Taniguchi
In Vitro and In Vivo Antiglycation Effects of *Connarus ruber* Extract
- 1325 Tan, Chun Hoe, Dawn Su Sim, Siew Huah Lim, Taznim Begam Mohd Mohidin, Gokula Mohan, Yun Yee Low, Toh Seok Kam, Kae Shin Sim
Antiproliferative and Microtubule-stabilizing Activities of Two Iboga-vobasine Bisindoles Alkaloids from *Tabernaemontana corymbosa* in Colorectal Adenocarcinoma HT-29 Cells
- 1152 Terço Leite, Patrícia Regina, Bethânia Rosa Lorençone, Karyne Garcia Tafarelo Moreno, Katiana Simões Lopes, Aline Aparecida Macedo Marques, Clara Soligo Fortini, Rhanany Alan Palozzi, Mariana Dalmagro, Cândida Aparecida Leite Kassuya, Ariany Carvalho dos Santos, Marcos José Salvador, Arquimedes Gasparotto Junior
The NO-cGMP-K⁺ Channel Pathway Participates in Diuretic and Cardioprotective Effects of *Blutaparon portulacoides* in Spontaneously Hypertensive Rats
- 855 Ureña-Vacas, Isabel, Elena González-Burgos, Pradeep Kumar Divakar, M. Pilar Gómez-Serranillos
Lichen Depsidones with Biological Interest
- 1199 Uto, Takuhiro, Nguyen Huu Tung, Tomoe Ohta, Yukihiko Shoyama
(+)-Magnolin Enhances Melanogenesis in Melanoma Cells and Three-Dimensional Human Skin Equivalent; Involvement of PKA and p38 MAPK Signaling Pathways
- 1175 Vasilev, Nikolay
Medicinal Plants: Guests and Hosts in the Heterologous Expression of High-Value Products
- 33 Wang, Dingkun, Yanlin Ren, Wei Sun, Jing Gong, Xin Zou, Hui Dong, Lijun Xu, Kaifu Wang, Fuer Lu
Berberine Ameliorates Glucose Metabolism in Diabetic Rats through the alpha7 Nicotinic Acetylcholine Receptor-Related Cholinergic Anti-Inflammatory Pathway
- 420 Wang, Junchi, Haoli Yan, Xiaoshuang Huo, Lingyu Li, Huijuan Wang, Meng Zhang, Xiaojin Li, Yaqin Zhao, Gang Chen, Jianyong Si
New Sulfoxide-Containing Derivatives from the Resin of *Ferula sinkiangensis*

- 559 Wu, Jiaqi, Yuzheng Wu, Yue Chen, Mengyang Liu, Haiyang Yu, Yi Zhang, Tao Wang
Desmethylbellidifolin Attenuates Dextran Sulfate Sodium-Induced Colitis: Impact on Intestinal Barrier, Intestinal Inflammation and Gut Microbiota
- 881 Xiang, Jin, Hang Kang, Hong-Gang Li, Yu-Long Shi, Ya-Li Zhang, Chang-Lei Ruan, Lin-Hui Liu, Han-Qi Gao, Tao Luo, Gao-Sheng Hu, Wei-Liang Zhu, Jing-Ming Jia, Jia-Chun Chen, Jin-Bo Fang
Competitive CatSper Activators of Progesterone from *Rhynchosia volubilis*
- 282 Yang, Meng-Ting, Yi-Xian Lin, Greta Yang, Tien-Fen Kuo, Yu-Chen Liang, Tsung-Han Lee, Cicero Lee-Tian Chang, Wen-Chin Yang
Functional and Mechanistic Studies of Two Anticoccidial Herbs, *Bidens pilosa* and *Artemisia indica*
- 1132 Yang, Yue, Yufang Ding, Huan Gao, Xiaowen Jiang, Qingchun Zhao
TCQA, A Natural Caffeoylquinic Acid Derivative Attenuates H₂O₂-Induced Neuronal Apoptosis by Suppressing Phosphorylation of MAPKs Signaling Pathway
- 43 Zheng, Yuanru, Lijuan Deng, Huihui Cao, Nishan Xu, Dongmei Zhang, Haiyan Tian, Baojing Li, Zibin Lu, Wencai Ye, Linzhong Yu, Chunlin Fan, Junshan Liu
Screening of Bufadienolides from Toad Venom Identifies Gammabufotalin as a Potential Anti-inflammatory Agent
- 685 Zulfiqar, Fazila, Pankaj Pandey, Siddharth K. Tripathi, Zulfiqar Ali, Amar G. Chittiboyina, Ikhlas A. Khan
Benzoylcyclopropane Derivatives from *Hypoxis hemerocallidea* Corms

Editorial

- 185 Melzig, Matthias F., Marta Mendel, Michael Walkenhorst
Editorial for the Special Issue "Veterinary Phytotherapy"
- 696 Oberlies, Nicholas H., Mario Figueroa
Editorial for the Special Issue Dedicated to Prof. A. Douglas Kinghorn
- 97 Editorial
- 570 Professor Dr. Dr. h.c. Otto Sticher (October 8, 1936 – March 11, 2022)
- 572 Professor Dr. Irmgard Merfort (May 18, 1952 – March 21, 2022)

Focus Issue Pyrrolizidine Alkaloids

- 144 Plaza, Alberto, Frank Toner, James Harris, Peter Ottersbach, Clive Roper, Catherine Mahony
Support for Regulatory Assessment of Percutaneous Absorption of Retronecine-type Pyrrolizidine Alkaloids through Human Skin
- 98 Schrenk, Dieter, Jörg Fahrner, Ashley Allemang, Peter Fu, Ge Lin, Catherine Mahony, Patrick P.J. Mulder, Ad Peijnenburg, Stefan Pfuhrer, Ivonne M.C.M. Rietjens, Benjamin Sachse, Barbara Steinhoff, Anja These, John Troutman, Jacqueline Wiesner
Novel Insights into Pyrrolizidine Alkaloid Toxicity and Implications for Risk Assessment: Occurrence, Genotoxicity, Toxicokinetics, Risk Assessment—A Workshop Report
- 125 Steinhoff, Barbara
Pyrrolizidine Alkaloid Contamination in Medicinal Plants: Regulatory Requirements and Their Impact on Production and Quality Control of Herbal Medicinal Products

- 130 Widjaja, Frances, Yasser Alhejji, Ivonne M. Rietjens
The Role of Kinetics as Key Determinant in Toxicity of Pyrrolizidine Alkaloids and Their N-Oxides
- 118 Wiesner, Jacqueline
Regulatory Perspectives of Pyrrolizidine Alkaloid Contamination in Herbal Medicinal Products

Formulation and Delivery Systems of Natural Products

- 479 Garcia, Sandra Alves, Priscila Bianca da Rocha, Bruno dos Souza, Andressa Tuane Paz, Ana Luiza Negris, Ricardo Neves Marreto, Edemilson Cardoso da Conceição, Maria Teresa Bara, Stephânia Fleury Taveira
Enhanced Skin Permeation of Punicalagin after Topical Application of Pluronic Micelles or Vesicles Loaded with *Lafoensia pacari* Extract
- 79 Kamble, Pavan Ram, Karimunnisa Sameer Shaikh
Optimization and Evaluation of Self-nanoemulsifying Drug Delivery System for Enhanced Bioavailability of Plumbagin
- 1256 Kurrimboccus, Fadilah, Ané Orchard, Michael Paul Danckwerts, Sandy van Vuuren
Antimicrobial Formulation of *Chrysopogon zizanioides* Essential Oil in an Emulsified Lotion for Acne
- 405 Marena, Gabriel Davi, Luiza Giroto, Luiz Leonardo Saldanha, Matheus Aparecido Ramos, Rone Aparecido De Grandis, Patrícia Bento da Silva, Anne Lígia Dokkedal, Marlus Chorilli, Tais Maria Bauab, Fernando Rogério Pavan, Eliane Trovatti, Wilton Rogério Lustrri, Flávia Ap. Resende
Hydroalcoholic Extract of *Myrcia bella* Loaded into a Microemulsion System: A Study of Antifungal and Mutagenic Potential
- 492 Martinelli, Giulia, Andrea Magnavacca, Marco Fumagalli, Mario Dell'Agli, Stefano Piazza, Enrico Sangiovanni
Cannabis sativa and Skin Health: Dissecting the Role of Phytocannabinoids

Natural Product Chemistry and Analytical Studies

- 389 Ahmed, Safwat A., Amany K. Ibrahim, Mohamed M. Radwan, Desmond Slade, Suman Chandra, Ikhlas A. Khan, Mahmoud A. ElSohly
Microbial Biotransformation of Cannabidiol (CBD) from *Cannabis sativa*
- 805 Antoniadi, LEMONIA, Apostolis Angelis, Panagiotis Stathopoulos, Eirini-Maria Bata, Zoe Papoutsaki, Maria Halabalaki, Leandros A. Skaltsounis
Oxidized Forms of Olive Oil Secoiridoids: Semisynthesis, Identification and Correlation with Quality Parameters
- 964 Bakasatae, Nazneen, Warissara Sangkaew, Nongluk Kunworarath, Julalak Chorachoo Ontong, Sathianpong Phoopha, Chutha Takahashi Yupanqui, Supayang Piyawan Voravuthikunchai, Nantiya Joycharat
The Standardized Wood Extract of *Albizia myriophylla*: Its Potential as an Active Ingredient in an Anti-inflammatory Herbal Gel Formulation
- 466 Balkrishna, Acharya, Siva Kumar Solleti, Hoshiyar Singh, Niti Sharma, Anurag Varshney
Withanolides from *Withania somnifera* Ameliorate Neutrophil Infiltration in Endotoxin-Induced Peritonitis by Regulating Oxidative Stress and Inflammatory Cytokines

- 826 Bossard, Elodie, Nikolaos Tsafantakis, Nektarios Aligiannis, Nikolas Fokialakis
A Development Strategy of Tailor-made Natural Deep Eutectic Solvents for the Enhanced Extraction of Hydroxynaphthoquinones from *Alkanna tinctoria* Roots
- 1233 Chen, Shipeng, Yinan Liao, Jinyan Lv, Huaxin Hou, Jie Feng
Quantitative Proteomics Based on iTRAQ Reveal that Nitidine Chloride Induces Apoptosis by Activating JNK/c-Jun Signaling in Hepatocellular Carcinoma Cells
- 994 de Amorim, Marcelo R., Tiago A. Paz, Luciano da Pinto, Felipe Hilário, Camila L. Zanini, Anna Caroline Aguiar, Débora E. Silva, Maysa Furlan, Rafael V. Guido, Taís M. Bauab, Adelino V. Netto, Lourdes C. dos Santos
New Isoquinoline Alkaloids from *Paraphaeosphaeria sporulosa* F03, a Fungal Endophyte Isolated from *Paepalanthus planifolius*
- 440 Doi, Mikio, Naoki Morita, Tsugumi Okuzawa, Satoru Ohgiya, Daisaku Okamoto, Kenichi Sato, Yukiya Ito, Hideyuki Matsuura, Yasuyuki Hashidoko
Pinellin Acid Isolated from Quercetin-rich Onions has a Peroxisome Proliferator-Activated Receptor-Alpha/Gamma (PPAR- α/γ) Transactivation Activity
- 1245 Domínguez-Balmaseda, Diego, Carlo Bressa, Arantxa Fernández-Romero, Beatriz de Lucas, Margarita Pérez-Ruiz, Alejandro F. San Juan, Marc Roller, Nicolas Issaly, Mar Larrosa
Evaluation of a Zingiber officinale and Bixa orellana Supplement on the Gut Microbiota of Male Athletes: A Randomized Placebo-Controlled Trial
- 538 Giera, David S., Michael Preisitsch, Hugues Brevard, Jörn Nemetz
Quantitative Removal of Pyrrolizidine Alkaloids from Essential Oils by the Hydrodistillation Step in Their Manufacturing Process
- 975 Husain, Islam, Olivia R. Dale, Vamshi Manda, Zulfiqar Ali, Bill J. Gurley, Amar G. Chittiboyina, Ikhlas A. Khan, Shabana I. Khan
Bulbine natalensis (currently Bulbine latifolia) and select bulbine knipholones modulate the activity of AhR, CYP1A2, CYP2B6, and P-gp
- 398 Kulić, Žarko, Thomas Ritter, Birgit Röck, Jens Elsässer, Heike Schneider, Stefan Germer
A Detailed View on the Proanthocyanidins in Ginkgo Extract EGb 761
- 1209 Lechtenberg, Matthias, Jandirk Sendker, Lisa Kastner, Andreas Hensel
Cyanogenesis in *Aralia spinosa* (Araliaceae)
- 950 Li, Dan, Yuanfeng Lyu, Jiajia Zhao, Xiaoyu Ji, Yufeng Zhang, Zhong Zuo
Accumulation of the Major Components from *Polygoni Multiflori Radix* in Liver and Kidney after Its Long-Term Oral Administrations in Rats
- 1348 Mamallapalli, Jessica, Siva Rama Kanumuri, Pedro Corral, Edward Johnston, Chunlin Zhuang, Christopher R. McCurdy, Carol A. Mathews, Abhishek Sharma, Chengguo Xing
Characterization of Different Forms of Kava (*Piper methysticum*) Products by UPLC-MS/MS
- 838 Manwill, Preston K., Laura Flores-Bocanegra, Manead Khin, Huzefa A. Raja, Nadja B. Cech, Nicholas H. Oberlies, Daniel A. Todd
Kratom (*Mitragyna speciosa*) Validation: Quantitative Analysis of Indole and Oxindole Alkaloids Reveals Chemotypes of Plants and Products
- 20 Mayr, Sophia, Simon Strasser, Christian G. Kirchler, Florian Meischl, Stefan Stuppner, Krzysztof B. Beć, Justyna Grabska, Sonja Sturm, Hermann Stuppner, Michael A. Popp, Günther K. Bonn, Christian W. Huck
Quantification of Silymarin in *Silybi mariani fructus*: Challenging the Analytical Performance of Benchtop vs. Handheld NIR Spectrometers on Whole Seeds
- 1223 Menezes, Pedro Modesto, Emanuella Chiara Pereira, Kátia Simoni Lima, Bismarques Augusto Silva, Mariana Coelho Brito, Tarcísio Cícero Araújo, Janaine Almeida Neto, Luciano Augusto Ribeiro, Fabrício Souza Silva, Larissa Araújo Rolim
Chemical Analysis by LC-MS of *Cannabis sativa* Root Samples from Northeast Brazil and Evaluation of Antitussive and Expectorant Activities
- 1369 Mengmeng, Song, Xu Zhuicheng, Han Sixuan, Sheng Xianjie, Chen Yan, Li Xinru, Su Yan, Li Qin, Shan Chenxiao, Xie Tong, Kang An
Systematic Identification of the Main Constituents from *Agrimonia pilosa* Ledeb. and Their Metabolites in Rats using HPLC-Q-TOF-MS/MS
- 447 Nowak, Monika, Isabel Tipke, Luise Bücken, Kerstin Franke, Marcus Lubienski, Till Beuerle
Biomarker-Based Determination of Equiseti herba Contamination by *Equisetum palustre* Using HPLC-MS/MS
- 985 Parveen, Iffat, Natascha Techen, Sara M. Handy, Jing Li, Charles Wu, Amar G. Chittiboyina, Ikhlas A. Khan
The Low Copy Nuclear Gene Region, Granule Bound Starch Synthase (GBSS1), as a Novel Mini-DNA Barcode for the Identification of Different Sage (*Salvia*) Species
- 1341 Powers, Chelsea N., John A. Mayo, Debra M. Moriarity, Bernhard Vogler, William N. Setzer, Robert L. McFeeters
Identification of Anticryptococcal Bornyl Compounds from *Verbesina turbacensis* and Their Structure-Activity Relationships
- 814 Rachmaniah, Orchidea, Erica G. Wilson, Young Hae Choi, Geert-Jan Witkamp, Robert Verpoorte
Pressurized Natural Deep Eutectic Solvent Extraction of Galanthamine and Related Alkaloids from *Narcissus pseudonarcissus*
- 1360 Waterstradt, Aljoscha, Moritz Winker, Amy Marisa Zimmermann-Klemd, Seema Devi, Ann-Kathrin Lederer, Roman Huber, Carsten Gründemann
Silicon Resorption from *Equisetum arvense* Tea – A Randomized, Three-Armed Pilot Study
- 576 Włodarczyk, Maciej, Michał Gleńsk
An in-depth look into a well-known herbal drug: Fingerprinting, isolation, identification, and content estimation of saponins in different *Strophanthus* seeds
- 518 Xia, Xiao, Jiao Zhang, Xiao-jiang Wang, Yan Lu, Dao-Feng Chen
New Phenolic Glycosides and Lignans from the Roots of *Lilium dauricum*
- 455 Yang, Qian, An Jia, Xizi Liu, Shiyi Han, Siyang Fan
Chemical Constituents from *Chloranthus elatior* and Their Inhibitory Effect on Human Dihydroorotate Dehydrogenase

Pharmacokinetics

- 1092 Moragrega, Inés, José Luis Ríos
Medicinal Plants in the Treatment of Depression. II: Evidence from Clinical Trials

Reviewer Summary

5 A Big Thank You to our Reviewers in the Past Year!

A

A. do Vale, Juliana A. 429
 Abegg, Vanessa Fabienne 1036
 Abreu, Lucas Silva 356
 Abubakar, Bilyaminu 650
 Abubakar, Murtala Bello 650
 Acero, Daniel 729
 Adeshina, Kehinde Ahmad 650
 Adomou, Aristide Cossi 292
 Agbangnan, Pascal 292
 Agbankpé, Alidehou Jerrold 292
 Aguiar, Anna Caroline 994
 Ahmed, Safwat A. 389
 Ai, Zhifu 1311
 Alasbahi, Rawiya H. 237
 Alhejji, Yasser 130
 Ali, Zulfiqar 685, 745, 975
 Aligiannis, Nektarios 826
 Alizadeh, Leila 367
 Allemang, Ashley 98
 Almeida, Alisson A. 429
 Amanto, Fabián Andrés 324
 Amaral, Flávio Almeida 1123
 Ambrose, Michael 1004
 An, Kang 1369
 Andrade, Anderson Wilbur 356
 Angelis, Apostolis 783, 805
 Antoniadi, LEMONIA 805
 Aoi, Moeka 1069
 Aoyagi, Yutaka 1069
 Araújo, Tarcísio Cícero 1223
 Arevalo-Villalobos, Jaime I. 1060
 Asai, Haruka 1069
 Ayrle, Hannah 200

B

Badounas, Fotis 783
 Bakasatae, Nazneen 964
 Balkrishna, Acharya 466
 Bara, Maria Teresa 479
 Bata, Eirini-Maria 805
 Batista, Nathália Vieira 1123
 Bauab, Tais Maria 405
 Bauab, Taís M. 994
 Beć, Krzysztof B. 20
 Becher, Vera 274
 Becker, Jens 274
 Bello, Muhammad Bashir 650
 Beuerle, Till 447
 Bian, Huimiao 899
 Bianchi, Carolina Paula 324
 Bismarck, Doris 274
 Boeing, Thaise 664
 Boland, Wilhelm 380
 Bonn, Günther K. 20
 Bossard, Elodie 826
 Braca, Alessandra 762
 Braga, Fernão Castro 1123
 Bressa, Carlo 1245
 Bressan, Gustavo C. 429
 Brevard, Hugues 538
 Brito, Larissa Froede 1123
 Brito, Mariana Coelho 1223
 Bücken, Luise 447

C

Cabral, Bárbara 356
 Camangi, Fabiano 762
 Candido, Luiza C. 1123
 Canesi, Laura 9
 Cao, Huihui 43
 Cao, Shijie 921
 Carreño-Campos, Christian 1060
 Ceapă, Corina-Diana 702
 Cech, Nadja B. 753, 838
 Chandra, Suman 389
 Chang, Cicero Lee-Tian 282
 Chang, Jinling 1299
 Chauveau, Antoine 1036
 Chen, Bingbing 507
 Chen, Chun 628
 Chen, Dao-Feng 518
 Chen, Daoxing 507
 Chen, Gang 420
 Chen, Hao 1190
 Chen, Jia-Chun 881
 Chen, Shipeng 1233
 Chen, Sibao 1141
 Chen, Wen 698
 Chen, Ya 794
 Chen, Yue 559
 Chenxiao, Shan 1369
 Cherek, Paulina 891
 Chittiboyina, Amar G. 685, 975, 985
 Cho, Kenka 899
 Choi, Young Hae 814
 Chorilli, Marlus 405
 Chun, Ji Hye 735
 Chłopecka, Magdalena 218
 Coelho, Fernanda M. 1123
 Conrado, Gabrielly Galdino 1163
 Corral, Pedro 1348
 Costa, Vivian Vasconcelos 1123
 Crandall, William J. 753
 Cui, Ming-Jun 678

D

da Conceição, Edemilson Cardoso 479
 Dagvadorj, Enkhmaa 380
 Dahse, Hans-Martin 380
 Dale, Olivia R. 975
 Dalmagro, Mariana 1152
 Danckwerts, Michael Paul 1256
 da Ponte, Alan Victor 341
 da Rocha, Priscila Bianca 479
 da Silva, Luisa Mota 664
 da Silva, Patrícia Bento 405
 Dassou, Gbèwonmèdèa Hospice 292
 de Amorim, Marcelo R. 994
 de Assis, Ellen Lima 341
 de Azevedo, Fátima de 356
 de Castro, Francker Duarte 356
 Decundo, Julieta María 324
 De Grandis, Rone Aparecido 405
 De Leo, Marinella 762
 Delijewski, Marcin 548
 Dell'Agli, Mario 492
 de Lucas, Beatriz 1245
 de Medeiros, Isac Almeida 356
 Demori, Ilaria 9
 Deng, Lijuan 43

de Oliveira, Adriana da 1163
 de Oliveira, Diego Pinto 1123
 de Oliveira, Leandro L. 429
 de Oliveira, Mariana Assíria 1123
 de Pádua, Rodrigo Maia 1123
 de Rezende, Adriana Augusto 356
 de Souza, Priscila 664
 De Tommasi, Nunziatina 762
 Devi, Seema 1360
 Diao, Hong-Mei 1190
 Díaz-Cantón, Jessica Karina 53
 Dieguez, Susana Nelly 324
 Ding, Liqin 921
 Ding, Yufang 1132
 Dissanayake, Amila Abishake 1287
 Divakar, Pradeep Kumar 855
 Djidohokpin, Donald 292
 Do, Kiep Minh 913
 Doi, Mikio 440
 Dokduang, Sirinapa 527
 Dokkedal, Anne Lígia 405
 Domínguez-Balmaseda, Diego 1245
 Dong, Hui 33
 Dong, Xiang 1190
 dos Santos, Ariany Carvalho 1152
 dos Santos, Lourdes C. 994
 Dotsika, Eleni 783
 Du, Huan 933
 Düfer, Martina 639
 D'Angiolo, Michele 762

E

Eiterer, Marinês 429
 Elmetwali, Taha 163
 Elsässer, Jens 398
 ElSohly, Mahmoud A. 389
 Erdenetsogt, Uugangerel 380
 Esch, Stefan 639
 Espitia Pinzón, Clara 53

F

Fahrer, Jörg 98
 Fajardo-Hernández, Carlos A. 729
 Fan, Chunlin 43
 Fan, Gang 933
 Fan, Siyang 455
 Fang, Jin-Bo 881
 Farinacci, Patricia 200
 Favi, Gnimansou Abraham 292
 Feng, Jie 1233
 Feng, Xinchu 921
 Fernández-Romero, Arantxa 1245
 Ferrante, Claudio 1275
 Figueroa, Mario 696, 702, 729
 Fischhuber, Katrin 794
 Flores-Bocanegra, Laura 729, 838
 Fokialakis, Nikolas 826
 Fortini, Clara Soligo 1152
 Franchi Júnior, Gilberto Carlos 1163
 Franke, Kerstin 447
 Franzblau, Scott G. 729
 Fu, Kai-Cong 678
 Fu, Peng 774
 Fu, Peter 98
 Fukuishi, Nobuyuki 1069

Fumagalli, Marco 492
Furlan, Maysa 994

G

Gao, Han-Qi 881
Gao, Huan 1132
Gao, Ying 1293
Garcia, Eliana de 1123
Garcia, Sandra Alves 479
Garcia, Vera Lúcia 1163
Gaspar, Lorena R. 774
Gasparotto Junior, Arquimedes 664, 1152
Ge, Junqi 1311
Ge, Yiman 933
Georges, Kambou 1287
Germer, Stefan 398
Giancaspro, Gabriel 1004
Giannoudis, Athina 163
Giera, David S. 538
Gilgen, Pierrine M. 152
Giroto, Luiza 405
Gleńsk, Michał 576
Gogou, Georgia 783
Gómez-Serranillos, M. Pilar 855
Gonçalves, Tays Amanda 356
Gong, Jing 33
González-Burgos, Elena 855
Gotov, Choijamts 380
Grabska, Justyna 20
Graidist, Potchanapond 527
Granica, Sebastian 254
Grasselli, Elena 9
Grazzia, Nathalia 1163
Groot, Maria J. 237
Gründemann, Carsten 1036, 1360
Guerra, Gerlane Coelho 356
Guido, Rafael V. 994
Gurley, Bill J. 975
Guzmán-Gutiérrez, Silvia Laura 53

H

Hagmüller, Werner 300
Hake, Alexander 639
Halabalaki, Maria 783, 805
Hamburger, Matthias 1036
Han, Mingming 507
Han, Na 899
Han, Shiyi 455
Handy, Sara M. 985, 1004
Harris, James 144
Hashidoko, Yasuyuki 440
Hayakawa, Yoshihiro 913
Heiss, Elke H. 794
Hematian, Shabnam 729
Henckel, Melissa M. 735
Hensel, Andreas 639, 1209
Hidalgo Triana, Noelia 292
Hilário, Felipe 994
Hopp, D. Craig 698
Hou, Ai-Jun 678
Hou, Huaxin 1233
Houriet, Joëlle 753
Hu, Gao-Sheng 881
Hu, Guoxin 507

Huber, Roman 1360
Huck, Christian W. 20
Huerta-Salazar, Elizabeth 53
Huffman, Michael A. 187
Huisamen, Barbara 62
Hull, Sara E. 735
Huo, Xiaoshuang 420
Husain, Islam 975

I

Ibrahim, Amany K. 389
Ibrahim, Kasimu Ghandi 650
Imam, Mustapha Umar 650
Inoue, Yukari 1026
Issaly, Nicolas 1245
Ito, Yukiya 440
Iwai, Michi 1026

J

Jambwa, Prosper 313
Ji, Xiaoyu 950
Jia, An 455
Jia, Jing-Ming 881
Jiang, Baohong 899
Jiang, Bei 1190
Jiang, Xiaowen 1132
Jin, Chen 1311
Jóhannsson, Freyr 891
Johnson, Rabia 62
Johnston, Edward 1348
Jones, Derick D. 753
Jordan, Erin 1267
Joubert, Elizabeth 1078
Joycharat, Nantiya 964

K

Kadoyama, Keiichi 1026
Kam, Toh Seok 1325
Kamble, Pavan Ram 79
Kang, Hang 881
Kanumuri, Siva Rama 1348
Karampetsou, Kalliopi 783
Karlik, Wojciech 218
Kassuya, Cândida Aparecida Leite 1152
Kastner, Lisa 1209
Kato, Koichi 1069
Katsande, Simbarashe 313
Kayser, Oliver 1047, 1267
Keller, Amy C. 735
Kennelly, Edward J 721
Ketchart, Wannarasmi 163
Khalifeh, Hala 9
Khan, Firoz Shah 729
Khan, Ikhlas A. 389, 685, 745, 975, 985
Khan, Shabana I. 745, 975
Khin, Manead 838
Kirchler, Christian G. 20
Kirchmair, Johannes 794
Kirchweger, Benjamin 794
Knaub, Leslie A. 735
Kodama, Takeshi 913
Kokotkiewicz, Adam 604
König, Jürgen 262
Koudoro, Yaya Alain 292

Koutsoni, Olga S. 783
Kranmer, Barbara 548
Krengel, Felix 53
Krewenka, Christopher 548
Krol, Agata 604
Kulić, Žarko 398
Kumazawa, Reika 1069
Kunworarath, Nongluk 964
Kuo, Tien-Fen 282
Kurosaki, Hiromasa 1069
Kurrimboccus, Fadilah 1256

L

Ladinig, Andrea 262
Lang, Li-Juan 1190
Langer, Thierry 794
Larrosa, Mar 1245
Latek, Urszula 218
Le, Thi Tu 1141
Leao, Tiago F. 774
Lechtenberg, Matthias 1209
Lederer, Ann-Kathrin 1360
Lee, Mi-Young 1116
Lee, Tsung-Han 282
Lei, Chang 1190
Lei, Chun 678
Leite, João P. 429
León-Santiago, Mayra 53
Li, Baojing 43
Li, Dan 950
Li, Hong-Gang 881
Li, Jia 678
Li, Jia-Nan 678
Li, Jing 985
Li, Junwei 507
Li, Lingyu 420
Li, Te 774
Li, Xiaojin 420
Li, Xue 899
Li, Ya-Nan 678
Li, Yinghui 507
Liang, Yu-Chen 282
Liao, Yinan 1233
Lim, Siew Huah 1325
Lima, Graziela D. 429
Lima, Kátia Simoni 1223
Lin, Ge 98
Lin, Yi-Xian 282
Liu, Junshan 43
Liu, Lin-Hui 881
Liu, Mengyang 559
Liu, Xizi 455
Liu, Yali 1311
Liu, Ye 1293
Lopes, Katiana Simões 1152
Lorençone, Bethânia Rosa 1152
Low, Yun Yee 1325
Lu, Fuer 33
Lu, Yan 518
Lu, Zhengfei 1004
Lu, Zibin 43
Lubienski, Marcus 447
Luczkiewicz, Maria 604
Luo, Jian 1311
Luo, Tao 881
Lustri, Wilton Rogério 405
Lv, Jinyan 1233

Lyu, Yuanfeng 950

M

Ma, Ruijing 721
 Magliocca, Giorgia 762
 Magnavacca, Andrea 492
 Mahalapbutr, Panupong 163
 Mahony, Catherine 98, 144
 Malami, Ibrahim 650
 Mamallapalli, Jessica 1348
 Manda, Vamshi 975
 Manirafasha, Claudine 62
 Manwill, Preston K. 838
 Mao, Ruihua 1293
 Marais, Erna 62
 Marena, Gabriel Davi 405
 Marques, Aline Aparecida Macedo 1152
 Marreto, Ricardo Neves 479
 Martinelli, Giulia 492
 Martínez, Guadalupe 324
 Marzocco, Stefania 762
 Mathews, Carol A. 1348
 Matope, Gift 313
 Matsumoto, Kinuyo 1026
 Matsuura, Hideyuki 440
 Maurer, Veronika 200
 Mayer, Elisabeth 262
 Mayer, Philipp 274
 Mayo, John A. 1341
 Mayr, Sophia 20
 McCurdy, Christopher R. 1348
 McFeeters, Robert L. 1341
 McGaw, Lyndy J. 313
 Medina-Ortiz, Abraham J. 729
 Meischl, Florian 20
 Melzig, Matthias F. 185, 200
 Mendel, Marta 185, 218
 Menezes, Pedro Modesto 1223
 Menghini, Luigi 1275
 Mengmeng, Song 1369
 Mevissen, Meike 200
 Meyer zu Schwabedissen, Henriette E. 152
 Miguel, Danilo Ciccone 1163
 Miller, Neil 1078
 Mitrpant, Chalermchai 163
 Miyata, Erika 1069
 Mohan, Gokula 1325
 Mohd Mohidin, Taznim Begam 1325
 Moldzio, Rudolf 548
 Moragrega, Inés 1092
 Moreno, Karyne Garcia Tafarelo 1152
 Moriarity, Debra M. 1341
 Morita, Hiroyuki 913
 Morita, Naoki 440
 Mulder, Patrick P.J. 98
 Müller, Elisabeth 274

N

Nadmid, Suvd 380
 Nagashima, Fumihiro 1069
 Naghdi, Nasser 367
 Nair, Muraleedharan Gopalan 1287
 Naman, C. Benjamin 774
 Nau, Lisa 274

Negrís, Ana Luiza 479
 Nemetz, Jörn 538
 Neto, Janaine Almeida 1223
 Netto, Adelino V. 994
 Nguyen, Gia-Nam 1047, 1267
 Nguyen, Hien Minh 913
 Nguyen, Thanh Tra 1141
 Nguyen, Thi Thu 1141
 Nguyen, Van Tuyen 1141
 Nie, Wen-Xing 628
 Ninh, Son The 1141
 Nitta, Yuko 1026
 Niveditha, Lekshmi 774
 Nowak, Monika 447

O

Oberlies, Nicholas H. 696, 838
 Ógmundsdóttir, Helga M. 891
 Ohgiya, Satoru 440
 Ohta, Tomoe 1199
 Okamoto, Daisaku 440
 Okuzawa, Tsugumi 440
 Ontong, Julalak Chorachoo 964
 Orchard, Ané 1256
 Ortiz-Caltempa, Anabel 1060
 Ottersbach, Peter 144
 Ouachinou, Jérôme Marie-Ange 292
 Ouyang, Qianxi 1299

P

Paetz, Christian 380
 Palmieri, Carlo 163
 Palozi, Rhanany Alan 1152
 Pandey, Pankaj 685
 Papoutsaki, Zoe 805
 Park, Bokyoung 1116
 Park, Gil-Sun 1116
 Parveen, Iffat 985
 Pavan, Fernando Rogério 405
 Paz, Andressa Tuane 479
 Paz, Tiago A. 994
 Pei, Jiao 1299
 Peijnenburg, Ad 98
 Pelzer, Chantal V. 753
 Peng, Xiaogang 1299
 Pereira, Emanuella Chiara 1223
 Pérez Gaudio, Denisa Soledad 324
 Pérez-Ruiz, Margarita 1245
 Pfuhrer, Stefan 98
 Phoopha, Sathianpong 964
 Piazza, Stefano 492
 Piechot, Alexander 1267
 Pinto, Luciano da 994
 Pitakbut, Thanet 1047
 Piwowski, Jakub P. 254
 Plaza, Alberto 144
 Politi, Matteo 1275
 Popowski, Dominik 254
 Popp, Michael A. 20
 Pott, Greg B. 735
 Potterat, Olivier 152, 1036
 Poulin, Remington X. 774
 Powers, Chelsea N. 1341
 Pradubyat, Nalinee 163
 Preisitsch, Michael 538

Prema, Prema 913
 Prokop, Désirée 300
 Prompat, Napat 527

Q

Qian, Jianchang 507
 Qin, Chunlun 1299
 Qin, Li 1369
 Qiu, Feng 921
 Qu, Zhao 1141
 Quan, Zheng 1004
 Queiroz-Junior, Celso Martins 1123

R

Rachmaniah, Orchidea 814
 Radad, Khaled 548
 Radhakrishnan, Srivedavyasri 745
 Radwan, Mohamed M. 389
 Raja, Huzefa A. 729, 838
 Ramezani, Sadrollah 367
 Ramirez, David G. 735
 Ramos, Matheus Aparecido 405
 Rashed, Zeinab El 9
 Regis, Rômulo Rocha 341
 Reichling, Jürgen 587
 Reisinger, Nicole 262
 Ren, Yanlin 33
 Resende, Flávia Ap. 405
 Reusch, Jane E.-B. 735
 Reyes-Chilpa, Ricardo 53
 Riazi, Gholam Hossein 367
 Ribeiro, Luciano Augusto 1223
 Rietjens, Ivonne M.C.M. 98, 130
 Ríos, José Luis 1092
 Ritter, Thomas 398
 Rivera-Chávez, José 702
 Rivero-Cruz, Isabel 729
 Röck, Birgit 398
 Rodrigues, Laís A. 429
 Rolfsson, Óttar 891
 Rolim, Larissa Araújo 1223
 Roller, Marc 1245
 Rollinger, Judith M. 794
 Roper, Clive 144
 Rosales-Mendoza, Sergio 1060
 Ruan, Chang-Lei 881
 Ruan, Hanli 1293, 1299

S

Sachse, Benjamin 98
 Saetang, Jirakrit 527
 Saldanha, Luiz Leonardo 405
 Salvador, Marcos José 1152
 Sangiovanni, Enrico 492
 Sangkaew, Natnaree 527
 Sangkaew, Warissara 964
 Sangkhathat, Surasak 527
 San Juan, Alejandro F. 1245
 Sarfare, Satish 745
 Sarma, Nandakumara D. 1004
 Sato, Kenichi 440
 Schäfer, Anima M. 152
 Schneider, Heike 398
 Schott, Theresa 262

Schrenk, Dieter 98
 Sendker, Jandirk 1209
 Setzer, William N. 1341
 Shaikh, Karimunnisa Sameer 79
 Sharma, Abhishek 1348
 Sharma, Niti 466
 Shasaltaneh, Marzieh Dehghan 367
 Shen, Lei 1190
 Shen, Yi 1190
 Shi, Yu-Long 881
 Shin, Min-Kyoung 913
 Shoyama, Yukihiko 1199
 Si, Jianyong 420
 Silva, Bismarques Augusto 1223
 Silva, Débora E. 994
 Silva, Fabrício Souza 1223
 Silva-Miranda, Mayra 53
 Silveira, Felipe Dantas 341
 Sim, Dawn Su 1325
 Sim, Kae Shin 1325
 Simões-Wüst, Ana Paula 1036
 Singh, Hoshiyar 466
 Sirotkin, Alexander V. 1020
 Sixuan, Han 1369
 Skaltsounis, Leandros A. 805
 Skaltsounis, Leandros-Alexios 783
 Slade, Desmond 389
 Smit, Sybrand Engelbrecht 62
 Solleti, Siva Kumar 466
 Song, Hongzhi 721
 Song, Yonggui 1311
 Soraci, Alejandro Luis 324
 Sousa, Lirlândia Pires 1123
 Souza, Bruno dos 479
 Souza, Daniele G. 1123
 Spergser, Joachim 300
 Spiess, Deborah 1036
 Spirgi, Clara 152
 Stathopoulos, Panagiotis 805
 Steinhoff, Barbara 98, 125
 Still, Patrick 698
 Strasser, Simon 20
 Stuppner, Hermann 20
 Stuppner, Stefan 20
 Sturm, Sonja 20
 Su, Dan 1311
 Sun, Wei 33
 Suzuki, Moe 1069
 Symma, Nico 639
 Sørensen Dalgaard, Tina 200

T

Tahir, Ammar 794
 Takahashi, Misato 1069
 Takahashi Yupanqui, Chutha 964
 Takano-Ohmuro, Hiromi 1026
 Takasugi, Rumi 1026
 Takenokuchi, Mariko 1026
 Tan, Chun Hoe 1325
 Tan, Jinni 721
 Tan, Qingang 721
 Taniguchi, Taizo 1026
 Taraporn, Siriporn 527
 Tavares, Josean Fechine 356
 Taveira, Stephânia Fleury 479
 Techen, Natascha 985
 Tedasen, Aman 527

Teichmann, Klaus 262
 Teixeira, Mauro Martins 1123
 Terço Leite, Patrícia Regina 1152
 Thavarool Puthiyedathu, Sajeevan 774
 These, Anja 98
 Tian, Haiyan 43
 Tichy, Alexander 300
 Tipke, Isabel 447
 Todd, Daniel A. 753, 838
 Toner, Frank 144
 Tong, Xie 1369
 Tresca, Giorgia 1275
 Tripathi, Siddharth K. 685
 Troutman, John 98
 Trovatti, Eliane 405
 Tsafantakis, Nikolaos 826
 Tung, Nguyen Huu 1199

U

Ureña-Vacas, Isabel 855
 Uto, Takuhiro 1199

V

van Vuuren, Sandy 1256
 Varshney, Anurag 466
 Vasilev, Nikolay 1175
 Verpoorte, Robert 814
 Villarreal, María Luisa 1060
 Vogler, Bernhard 1341
 Voigt, Kerstin 380
 Voravuthikunchai, Supayang Piyawan 964

W

Walkenhorst, Michael 185, 200
 Wan, Baojie 729
 Wang, Dingkun 33
 Wang, Huijuan 420
 Wang, Junchi 420
 Wang, Kaifu 33
 Wang, Kun 921
 Wang, Linlin 899
 Wang, Min 1190
 Wang, Tao 559
 Wang, Tingting 774
 Wang, Xiao-Jiang 518
 Wang, Yang 899
 Wasilewicz, Andreas 794
 Waterstradt, Aljoscha 1360
 Weber, Wendy 698
 Widjaja, Frances 130
 Wiesner, Jacqueline 98, 118
 Wilson, Erica G. 814
 Win, Nwet Nwet 913
 Winker, Moritz 1036, 1360
 Witkamp, Geert-Jan 814
 Wu, Charles 985
 Wu, Jiaqi 559
 Wu, Peng 899
 Wu, Yuzheng 559
 Włodarczyk, Maciej 576

X

Xia, Xiao 518
 Xiang, Jin 881
 Xianjie, Sheng 1369
 Xiao, Chao-Jiang 1190
 Xing, Chengguo 1348
 Xinru, Li 1369
 Xu, Lijun 33
 Xu, Maonian 891
 Xu, Nishan 43
 Xu, Pengfei 1311
 Xu, Qun 1004
 Xu, Tao 507
 Xu, Tong 933
 Xu, Xinmei 933

Y

Yan, Chen 1369
 Yan, Haoli 420
 Yan, Su 1369
 Yang, Greta 282
 Yang, Meng-Ting 282
 Yang, Ming 1311
 Yang, Qian 455
 Yang, Wen-Chin 282
 Yang, Yue 1132
 Ye, Wencai 43
 Yi, Huan 933
 Yin, Jun 899
 Yoshida, Kazutoshi 1026
 Yu, Haiyang 559
 Yu, Linzhong 43

Z

Zanatta, Ana C. 429
 Zanini, Camila L. 994
 Zentek, Jürgen 254
 Zhang, Chuantao 933
 Zhang, Dongmei 43
 Zhang, Jiao 518
 Zhang, Meng 420
 Zhang, Ning 1004
 Zhang, Ruowen 1311
 Zhang, Xianjing 899
 Zhang, Xiaodan 507
 Zhang, Ya-Li 881
 Zhang, Yi 559
 Zhang, Yongyu 899
 Zhang, Yufeng 950
 Zhao, Chengcheng 933
 Zhao, Jiajia 950
 Zhao, Qingchun 1132
 Zhao, Yaqin 420
 Zheng, Yuanru 43
 Zhou, Ming 1293
 Zhou, Yu-Bo 678
 Zhu, Genhua 1311
 Zhu, Qi-Jie 1190
 Zhu, Wei-Liang 881
 Zhu, Ze-Feng 628
 Zhuang, Chunlin 1348
 Zhuicheng, Xu 1369
 Zimmermann-Klemd, Amy Marisa 1360
 Zitterl-Eglseer, Karin 300

Zou, Xin 33
Zou, Yong 628
Zucolotto, Silvana Maria 356
Zulfiqar, Fazila 685, 745
Zuo, Zhong 950