Food & Function

rsc.li/food-function

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

IN THIS ISSUE

ISSN 2042-650X CODEN FFOUAL 14(12) 5455-5822 (2023)



Cover See Baiyi Lu et al., pp. 5562-5575.

Image reproduced by permission of Baiyi Lu from Food Funct., 2023, **14**, 5562.



Inside cover

See Xiaojuan Liu et al., pp. 5576-5588.

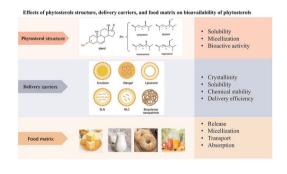
Image reproduced by permission of Xiaojuan Liu from Food Funct., 2023, 14, 5576.

REVIEWS

5465

Effects of food formulation on bioavailability of phytosterols: phytosterol structures, delivery carriers, and food matrices

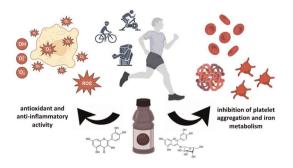
Tong Wang, Chuanguo Ma, Yuyuan Hu, Shujing Guo, Ge Bai, Guolong Yang* and Ruinan Yang*



5478

How can chokeberry (Aronia) (poly)phenol-rich supplementation help athletes? A systematic review of human clinical trials

Reza Zare, Rachel Kimble, Ali Ali Redha,* Giuseppe Cerullo and Tom Clifford



Editorial Staff

Executive Editor

Philippa Ross

Deputy Editor

Alice Smallwood

Editorial Production Manager Iason Woolford

Development Editor

David Lake

Publishing Editors

Gabriel Clarke, Derya Kara-Fisher, Emma Stephen, Ziva Whitelock

Publishing Assistant

Andrea Whiteside

Editorial Assistant Leo Curtis

Publisher

Jeanne Andres

For queries about submitted articles please contact Jason Woolford, Editorial production manager, in the first instance. E-mail food@rsc.org

For pre-submission queries please contact Philippa Ross, Executive Editor. E-mail food-rsc@rsc.org

Food & Function (electronic: ISSN 2042-650X) is published 12 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK.

All orders, with cheques made payable to the Royal Society of Chemistry, should be sent to the Royal Society of Chemistry Order Department, Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road,

Cambridge, CB4 0WF, UK Tel +44 (0)1223 432398; E-mail orders@rsc.org

2023 Annual (electronic) subscription price: £2665; US\$4591. Customers in Canada will be subject to a surcharge to cover GST. Customers in the EU subscribing to the electronic version only will be charged VAT.

If you take an institutional subscription to any Royal Society of Chemistry journal you are entitled to free, site-wide web access to that journal. You can arrange access via Internet Protocol (IP) address at www.rsc.org/ip

Customers should make payments by cheque in sterling payable on a UK clearing bank or in US dollars payable on a US clearing bank.

Whilst this material has been produced with all due care, the Royal Society of Chemistry cannot be held responsible or liable for its accuracy and completeness, nor for any consequences arising from any errors or the use of the information contained in this publication. The publication of advertisements does not constitute any endorsement by the Royal Society of Chemistry or Authors of any products advertised. The views and opinions advanced by contributors do not necessarily reflect those of the Royal Society of Chemistry which shall not be liable for any resulting loss or damage arising as a result of reliance upon this material. The Royal Society of Chemistry is a charity, registered in England and Wales, Number 207890, and a company incorporated in England by Royal Charter (Registered No. RC000524), registered office: Burlington House, Piccadilly, London W1J 0BA, UK,

Telephone: +44 (0) 207 4378 6556. Advertisement sales:

Tel +44 (0) 1223 432246; Fax +44 (0) 1223 426017; E-mail advertising@rsc.org

For marketing opportunities relating to this journal, contact marketing@rsc.org

Food & Function

Linking the chemistry and physics of food with health and nutrition rsc.li/food-function

Editorial Board

Editor-in-Chief

Christine Morand, INRA, France

Associate Editors

Lillian Barros, Polytechnic Institute of Braganca, Portugal Catherine Bondonno, Edith Cowan

University, Australia

Laura Bravo-Clemente, Institute of Food Science, Technology and Nutrition, Spain Center and University of Arkansas for Medical Sciences, USA

Monica Galleano, University of Buenos Aires, Argentina

Liwei Gu, University of Florida, USA Kee-Hong Kim, Purdue University, USA Andrew Nielson, North Carolina State University, USA

Mario Ferruzzi. Arkansas Children's Nutrition Ana Rodriguez-Mateos, King's College London, UK

Hiroyuki Sakakibara, University of Miyazaki, Japan

Elke Scholten, Wageningen University, The Netherlands

Advisory Board

Mario Allegra, University of Palermo, Italy Hitoshi Ashida, Kobe University, Japan Letizia Bresciani, University of Parma, Italy Aedin Cassidy, University of East Anglia, UK Steven Feng Chen, Peking University, China Zhen-yu Chen, Chinese University of Hong Kong, Hong Kong Peter Clifton, Baker IDI Heart & Diabetes

Institute

Kevin Croft, University of Western Australia,

Eric Decker, University of Massachusetts, USA Inês Figueira, NOVA Medical School, Portugal Tim Foster, University of Nottingham, UK Cesar Fraga, University of Buenos Aires, Argentina & University of California, Davis,

Rocio García-Villalba, CEBAS-CSIC, Spain Mike Gidley, University of Queensland,

H. Douglas Goff, University of Guelph, Canada George van Aken, NIZO Food Research, The Antonio Gonzales-Sarrias, CEBAS-CSIC, Spain Chi-Tang Ho, Rutgers University, USA Richard Hurrell, ETH Zurich, Switzerland Luana Izzo, University of Naples Federico II Italy

Rui Hai Liu, Cornell University, USA Alejandro Marangoni, University of Guelph, Canada

Julian McClements, University of Massachusetts, USA Dragan Milenkovic, University of California,

Davis, USA Paul Moughan, Riddet Institute, Massey

University, New Zealand Kevin Murray, The University of Western Australia, Australia

Patricia Oteiza, University of California, Davis, USA Junji Terao, Konan Women's University, Japan Netherlands

Rob van Dam, National University of Singapore, Singapore

Erik van der Linden, TI Food & Nutrition, The Netherlands

Natalie Ward, University of Western Australia, Australia

Gary Williamson, University of Leeds, UK Jianping Wu, University of Alberta, Canada Xingbin Yang, Shaanxi Normal University,

Gow-Chin Yen, National Chung Hsing University, Chinese Taipei Beiwei Zhu, Dalian Polytechnic University,

Information for Authors

Full details on how to submit material for publication in Food & Function are given in the Instructions for Authors (available from http://www.rsc.org/authors). Submissions should be made via the journal's homepage: rsc.li/food-function

Authors may reproduce/republish portions of their published contribution without seeking permission from the Royal Society of Chemistry, provided that any such republication is accompanied by an acknowledgement in the form: (Original Citation)-Reproduced by permission of the Royal Society of Chemistry

This journal is @ The Royal Society of Chemistry 2023.

Apart from fair dealing for the purposes of research or private study for non-commercial purposes, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988 and the Copyright and Related Rights Regulation 2003, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the Publishers or in the case of reprographic reproduction in accordance with the terms of licences issued by the Copyright Licensing Agency in the UK. US copyright law is applicable to users in the USA.

Registered charity number: 207890

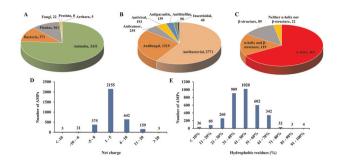


REVIEWS

5492

Plant antimicrobial peptides: a comprehensive review of their classification, production, mode of action, functions, applications, and challenges

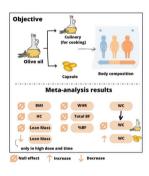
Fanglei Zou, Chunming Tan, Tharushi S. Shinali, Bo Zhang, Lili Zhang, Zixin Han and Nan Shang*



5516

Olive oil and body fat: a systematic review with meta-analysis

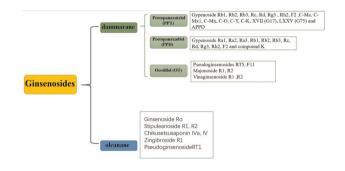
Ana Clara Neville Armond Santos, Myrelle Louíse Duarte de Souza, Adriane Moreira Machado and Camila Kümmel Duarte*



5537

Ginsenosides can target brain-derived neurotrophic factor to improve Parkinson's disease

Yingying Ding, Benson O. A. Botchway, Yong Zhang and Xuehong Liu*



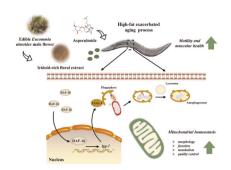
5551

Meta-analysis of the association between major foods with added fructose and non-alcoholic fatty liver disease

Wenqi Liu, Daokuan Zhai, Tingjing Zhang, Nyasha Grace Mudoti, Qing Chang, Yashu Liu, Yuhong Zhao, Yang Ding* and Yang Xia*

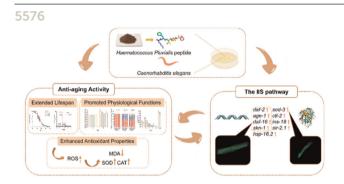


5562



Asperuloside, the bioactive compound in the edible Eucommia ulmoides male flower, delays muscle aging by daf-16 mediated improvement in mitochondrial dysfunction

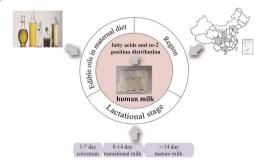
Qi Chen, Qinjun Zhang, Amel Thanina Amrouche, Weisu Huang and Baiyi Lu*



A novel peptide derived from Haematococcus pluvialis residue exhibits anti-aging activity in Caenorhabditis elegans via the insulin/IGF-1 signaling pathway

Wanshi He, Junting Xie, Zenghui Xia, Xiaoyan Chen, Jie Xiao, Yong Cao and Xiaojuan Liu*

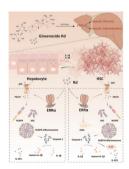
5589



Fatty acids and their sn-2 positional distribution in breast milk and their association with edible oils in maternal diet: a study of five regions in China

Fangmin Wang, Jiahui Yu, Li Wang, Shuai Wang, Qingzhe Jin, Qingyun Wang,* Wei Wei* and Xingguo Wang

5606



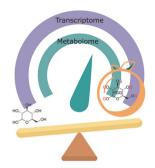
Ginsenoside Rd, a natural production for attenuating fibrogenesis and inflammation in hepatic fibrosis by regulating the ERR α -mediated P2X7r pathway

Long Cui, Yu-Jing Tan, Shi-Qi Xu, Bo-Feng Qin, Meng-Xue Xiu, Xue Zhang, Li-Qiang Shi,* Hai-Ming Sun* and Jian Song*

5620

Metabolic regulation and antihyperglycemic properties of diet-derived PGG through transcriptomic and metabolomic profiling

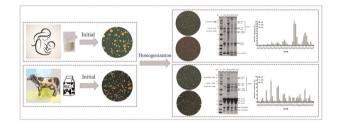
An-Nan Zhang, Chengdi Huang, Lili Yan, Xiaovi Liu, Fengyu Wang, Zhichao Zhang, Lugi Li, Cunli Zhang* and Qiang Zhang*



5631

Comparison of lipid structure and composition in human or cow's milk with different fat globules by homogenization

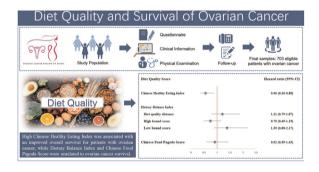
Pu Zhao, Dan Li, Xinghe Zhang, Xingwang Ye, Zhiqiang Zhang, Zhengdong Liu, Zhiyuan Yan, Wei Wei,* Qingzhe Jin and Xingguo Wang*



5644

Diet quality and survival after ovarian cancer: results from an ovarian cancer follow-up study (OOPS)

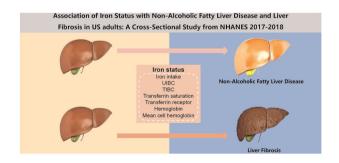
Xin-Yu Li, Chuan Liu, Fang-Hua Liu, Gang Zheng, Hui-Juan Yang, Yi-Fan Wei, Xue Qin, Qian Xiao, Yu-Hong Zhao, Song Gao,* Ting-Ting Gong* and Qi-Jun Wu*



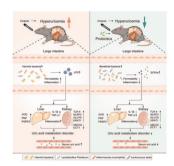
5653

Association of iron status with non-alcoholic fatty liver disease and liver fibrosis in US adults: a crosssectional study from NHANES 2017-2018

Liao Tan, Qiaoyu Zhou, Jie Liu, Zhaoya Liu* and Ruizheng Shi*

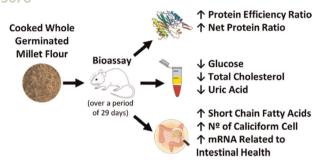


5663



Lactobacillus plantarum LLY-606 supplementation ameliorates hyperuricemia via modulating intestinal homeostasis and relieving inflammation

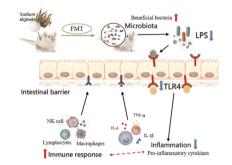
Renije Shi, Jin Ye, Hua Fan, Chunxia Xiao, Danna Wang, Bing Xia, Zhenting Zhao, Beita Zhao, Xiaoshuang Dai* and Xuebo Liu*



Germinated and non-germinated cooked whole millet (Pennisetum glaucum (L.) R. Br.) flours show a promising effect on protein quality, biochemical profile and intestinal health in vivo

Thauana Lorena Silva Magalhães, Bárbara Pereira da Silva, Mariana Grancieri, Haira Guedes Lúcio, Renata Celi Lopes Toledo, Roberta Ribeiro Silva Barra, Carlos Wanderlei Piler de Carvalho and Hércia Stampini Duarte Martino*

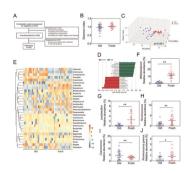
5690



Fecal microbiota transplantation from sodium alginate-dosed mice and normal mice mitigates intestinal barrier injury and gut dysbiosis induced by antibiotics and cyclophosphamide

Juan Huang, Haolin Zhou, Tao Song, Bing Wang, Hongda Ge, Demeng Zhang, Peili Shen, Xia Qiu and Huajun Li*

5702



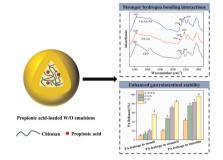
Gut indigenous Ruminococcus gnavus alleviates constipation and stress-related behaviors in mice with loperamide-induced constipation

Rong Li, Sheng Xu, Bei Li, Bo Zhang, Weihua Chen, Die Dai and Zhi Liu*

5716

Encapsulation of propionic acid within the aqueous phase of water-in-oil emulsions: reduced thermal volatilization and enhanced gastrointestinal stability

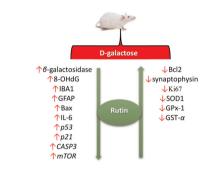
Huaying Zeng, Ce Cheng, Youfa Xie,* David Julian McClements, Lu Zhang, Xiaolin Wu, Hongxia Gao, Wenjun Liu, Liqiang Zou* and Liu Wei



5728

Rutin attenuates D-galactose-induced oxidative stress in rats' brain and liver: molecular docking and experimental approaches

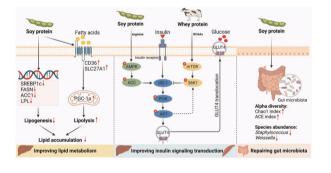
Shaimaa M. Saafan, Shymaa A. Mohamed, Ahmed E. Noreldin, Fayza A. El Tedawy, Yaser H. A. Elewa, Reda S. Fadly, Soad Khalil Al Jaouni, Ali H. El-Far* and Abdelwahab A. Alsenosy



5752

Soy protein compared with whey protein ameliorates insulin resistance by regulating lipid metabolism, AMPK/mTOR pathway and gut microbiota in high-fat diet-fed mice

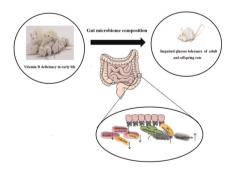
Andong Ji, Wei Chen, Chang Liu, Tianyu Zhang, Runjia Shi, Xinqi Wang, Huina Xu and Duo Li*



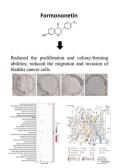
5768

Vitamin D deficiency in early life regulates gut microbiome composition and leads to impaired glucose tolerance in adult and offspring rats

Jing Liu, Junyi Liu, Jingyi Zhang, Chunyan Liu, Chunbo Qu* and Lixin Na*



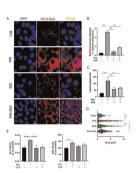
5787



Comparative transcriptomic analysis and mechanistic characterization revealed the use of formononetin for bladder cancer treatment

Huanhuan Zhou, Ping Wang, Xian Qin, Xing Zhang,* Keng Po Lai* and Jian Chen*

5805



An aqueous olive leaf extract (OLE) ameliorates parameters of oxidative stress associated with lipid accumulation and induces lipophagy in human hepatic cells

Tacconi S., Longo S., Guerra F., Moliteni C., Friuli M., Romano A., Gaetani S., Paradiso V. M., Difonzo G., Caponio F., Lofrumento D., vergara D., Bucci C., Dini L. and Giudetti A. M.*

CORRECTION

5820

Correction: Deep Shotgun metagenomic and 16S rRNA analysis revealed the microbial diversity of lactic acid bacteria in traditional fermented foods of eastern Hainan, China

Yuqing Wu, Ao Li, Lin Chen, Qianxi Chen, Jiyang Li, Yanqing Xu* and Dongxue Huo*