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(8) 3393-3894 (2023)



Cover See Nan Peng et al., pp. 3463-3474.

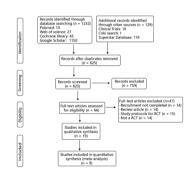
Image reproduced by permission of Nan Peng from Food Funct., 2023, **14**, 3463.

REVIEWS

3406

Meta-analysis of randomized controlled trials of the effects of probiotics in Parkinson's disease

Chuanqi Chu, Leilei Yu, Yiwen Li, Hang Guo, Qixiao Zhai, Wei Chen* and Fengwei Tian*



3423

Health potential of fermented goat dairy products: composition comparison with fermented cow milk, probiotics selection, health benefits and mechanisms

Li Chen,* Emilia Bagnicka,* He Chen and Guowei Shu*



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, 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

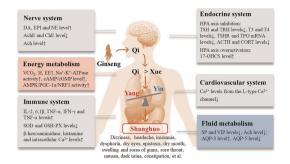


REVIEWS

3437

Ginseng and "Shanghuo" (fireness): a comprehensive review from the viewpoints of TCM theory and modern science

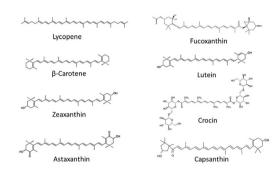
Jiagi Tan, Hongmei Zhang, Li Zhang* and Hongxi Xu*



3454

Role of carotenoids in adipose tissue through the AMPK-mediated pathway

Yasmin Alaby Martins Ferreira, Giovana Jamar, Débora Estadella and Luciana Pellegrini Pisani*

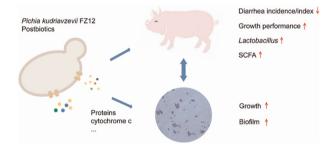


PAPERS

3463

Postbiotics from Pichia kudriavzevii promote intestinal health performance through regulation of Limosilactobacillus reuteri in weaned piglets

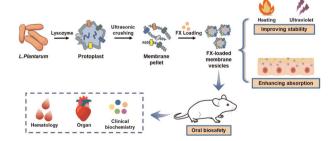
Zhenting Zhang, Qiujin Guo, Jing Wang, Hongyan Tan, Xuexia Jin, Yurong Fan, Jiali Liu, Shumiao Zhao, Jinshui Zheng and Nan Peng*



3475

Engineering probiotics-derived membrane vesicles for encapsulating fucoxanthin: evaluation of stability, bioavailability, and biosafety

Duo Liang, Chenyue Liu, Jiaxuan Li, Yu Li, Jiashu Li, Mingqian Tan and Wentao Su*

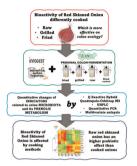


The state of the s

Microbiome—metabolomics analysis reveals the potential effect of verbascoside in alleviating cognitive impairment in db/db mice

Zheng Ran, Bowei Ju, Lin Cao, Qiang Hou, Limei Wen, Ruoyu Geng, Yucheng Liao, Junping Hu* and Jianhua Yang*

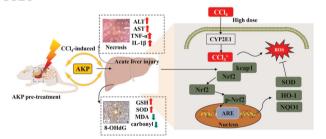
3509



Impact of cooking methods of red-skinned onion on metabolic transformation of phenolic compounds and gut microbiota changes

Alice Cattivelli, Lorenzo Nissen,* Flavia Casciano, Davide Tagliazucchi and Andrea Gianotti*

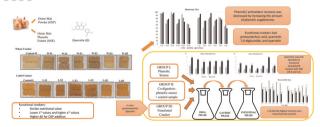
3526



Peptides from Antarctic krill (*Euphausia superba*) ameliorate acute liver injury in mice induced by carbon tetrachloride *via* activating the Nrf2/HO-1 pathway

Meng Wang, Lei Zhang, Hao Yue, Weizhen Cai, Haowen Yin, Yingying Tian, Ping Dong* and Jingfeng Wang*

3538



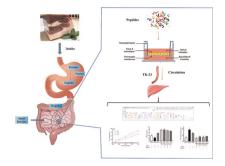
Protein-phenolic interactions in lentil and wheat crackers with onion skin phenolics: effects of processing and *in vitro* gastrointestinal digestion

Deniz Günal-Köroğlu, Semra Turan and Esra Capanoglu*

3552

Transepithelial transport and cytoprotection of novel antioxidant peptides isolated from simulated gastrointestinal digestion of Xuanwei ham

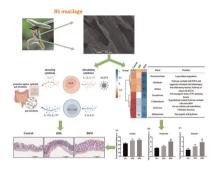
Yao-yao Hu, Shan Xiao,* Bo Wang, Rui-hong Xie, Yan-xue Cai and Ji-hui Wang*



3564

A special polysaccharide hydrogel coated on Brasenia schreberi: preventive effects against ulcerative colitis via modulation of gut microbiota

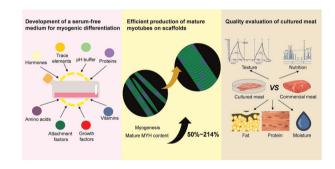
Jiawei Wan,* Xiujuan Yu, Jiao Liu, Jing Li, Tingyang Ai, Cong Yin, Hong Liu* and Rui Qin



3576

Production of mature myotubes in vitro improves the texture and protein quality of cultured pork

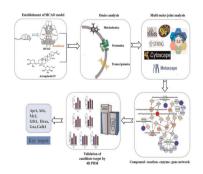
Xin Guan, Qiyang Yan, Zhenwu Ma* and Jingwen Zhou*



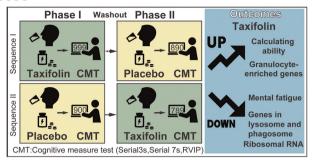
3588

Integrated transcriptomics, proteomics and metabolomics to identify biomarkers of astragaloside IV against cerebral ischemic injury in rats

Xiaoyu Wei, Yu He, Haitong Wan, Junjun Yin, Bingying Lin, Zhishan Ding, Jiehong Yang* and Huifen Zhou*

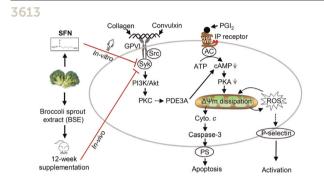


3600



Ingestion of taxifolin-rich foods affects brain activity, mental fatigue, and the whole blood transcriptome in healthy young adults: a randomized, double-blind, placebo-controlled, crossover study

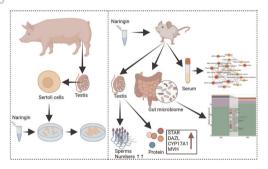
Fumika Shinozaki,* Asuka Kamei,* Kousuke Shimada, Hiroshi Matsuura, Takeo Shibata, Mayumi Ikeuchi, Kayo Yasuda, Takashige Oroguchi, Noriaki Kishimoto, Shinji Takashimizu, Yasuhiro Nishizaki and Keiko Abe*



Sulforaphane attenuates glycoprotein VI-mediated platelet mitochondrial dysfunction through up-regulating the cAMP/PKA signaling pathway in vitro and in vivo

Xinyu Zhou, Xinhui Huang, Chunting Wu, Yongjie Ma, Weiqi Li, Jinqiu Hu, Rong Li and Fuli Ya*

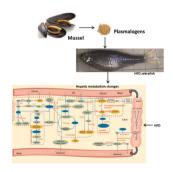
3630



Naringin regulates intestinal microorganisms and serum metabolites to promote spermatogenesis

Pei-Yu Dong, Sheng-Lin Liang, Long Li, Jing Liu, Shu-Er Zhang, Francesca Gioia Klinger, Wei Shen and Xi-Feng Zhang*

3641



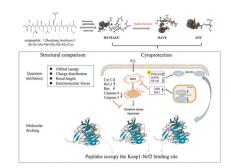
Transcriptomics integrated with metabolomics reveals the ameliorating effect of mussel-derived plasmalogens on high-fat diet-induced hyperlipidemia in zebrafish

Junli Feng, Xi Chen, Shitong Wang, Jian Zhang, Qingcheng Wang, Shunyuan Guo and Qing Shen*

3659

Comparative in silico and in vitro study of the stability and biological activity of an octapeptide from microalgae Isochrysis zhanjiangensis and its truncated short peptide

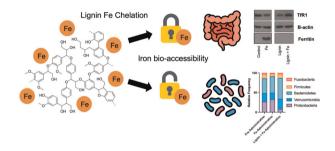
Liyuan Lin, Yuan-Lin He, Yi Liu, Pengzhi Hong, Chunxia Zhou, Shengli Sun and Zhong-Ji Qian*



3673

Intestinal iron bio-accessibility changes by Lignin and the subsequent impact on cell metabolism and intestinal microbiome communities

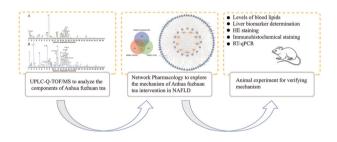
Richard D. Horniblow,* Prachi Pathak, Maryam Eshrati, Gladys O. Latunde-Dada and Chris Tselepis



3686

A UPLC-Q-TOF/MS and network pharmacology method to explore the mechanism of Anhua fuzhuan tea intervention in nonalcoholic fatty liver disease

Feng-Ming Tian, Jian Yi, Yan Tang, Bo-Wei Chen, Hong-Ping Long, Ying-Fei Liu, Yin Ou-yang, Wen-Jiang Zhang, Rong-Mei Tang and Bai-Yan Liu*

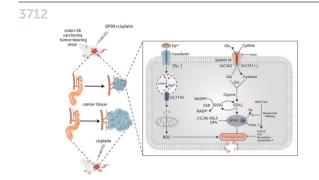


3701

The effect of ginger (Zingiber officinale) supplementation on clinical, biochemical, and anthropometric parameters in patients with multiple sclerosis: a double-blind randomized controlled trial

Sahar Foshati, Maryam Poursadeghfard, Zahra Heidari and Reza Amani*

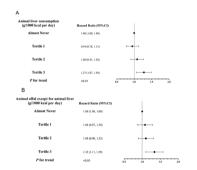




Structural characterization of a sulfated polysaccharide from Gracilariopsis lemaneiformis and its potentiation of cisplatin antitumor activity in Colon-26 carcinoma tumor-bearing mice by inducing ferroptosis

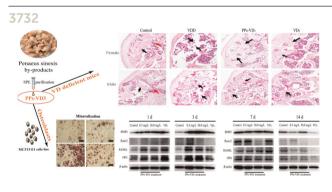
Bingna Cai, Lianxiang Luo, Xiaodan Chen, Xiangtan Zhao, Jiake He, Hua Chen, Peng Wan, Deke Chen and Jianyu Pan*

3722



Association between the intake of animal offal and depressive symptoms: a TCLSIH cohort study

Hanzhang Wu, Yeqing Gu,* Ge Meng, Qing Zhang, Li Liu, Hongmei Wu, Shunming Zhang, Xuena Wang, Juanjuan Zhang, Shaomei Sun, Xing Wang, Ming Zhou, Qiyu Jia, Kun Song, Hong Chang* and Kaijun Niu*



Beneficial regulation of vitamin D₃-rich extract from the processing by-products of Penaeus sinensis on preosteoblastic MC3T3-E1 cells and improvement of bone health in VD-deficient mice

Xinyan Liu, Ru Song,* Rongbian Wei, Baoding Zhao and Yurou Chu

3746



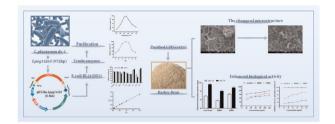
Microencapsulation of olive mill wastewater in Saccharomyces cerevisiae cells by spray drying and in vitro bioaccessibility of phenolic compounds

Oznur Saroglu, Berkay Tav, Rusen Metin Yildirim and Ayse Karadag*

3760

Heterologous expression and characterization of an endoglucanase from Lactobacillus plantarum dy-1

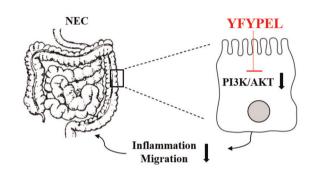
Jiaying Li, Juan Bai, Jie Yuan, Songtao Fan, Ting Zhang, Tao Pan, Yansheng Zhao, Jiayan Zhang and Xiang Xiao*



3769

The casein-derived peptide YFYPEL alleviates intestinal epithelial cell dysfunction associated with NEC by regulating the PI3K/AKT signaling pathway

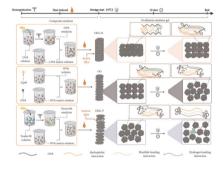
Wenjuan Chen, Yanjie Chen, Yun Qian, Jun Zhang, Xiaoshan Hu, Xiangyun Yan, Chengyao Jiang, Shuwen Yao, Qinlei Yu, Xiaohui Chen* and Shuping Han*



3779

Influence and effect mechanism of filler type on the physicochemical properties, microbial numbers, and digestibility of ovalbumin emulsion gels during storage

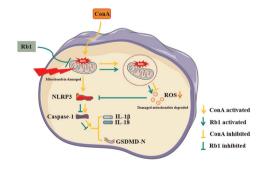
Ruiling Li, Na Wu, Hui Xue, Binghong Gao, Huilan Liu, Tianfeng Han, Xiaobo Hu, Yonggang Tu* and Yan Zhao*

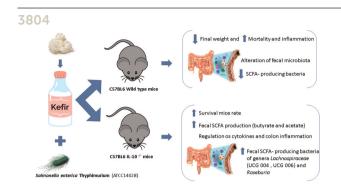


3793

Ginsenoside Rb1 alleviated concanavalin A-induced hepatocyte pyroptosis by activating mitophagy

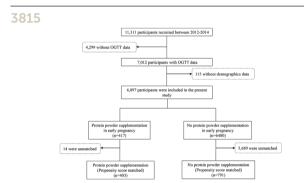
Qian Zhang, Jinping Hu, Ankang Mao, Meitong Liu, Shuang Guan* and Jing Lu*





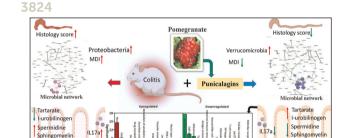
The role of IL-10 in regulating inflammation and gut microbiome in mice consuming milk kefir and orally challenged with S. Typhimurium

Mariana de Fátima Albuquerque Pereira.* Larissa Gabriela Morais de Ávila. Bruna Cristina dos Santos Cruz, Bruno Campos Silva, Leandro Licursi de Oliveira. Reggiani Vilela Gonçalves, Andrea de Oliveira Barros Ribon, Tiago Antônio de Oliveira Mendes and Maria do Carmo Gouveia Peluzio*



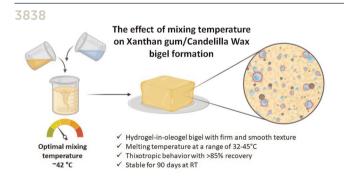
Protein powder supplementation in early pregnancy and the risk of gestational diabetes mellitus: a prospective cohort study

Meng Yang, Zhonggiang Cao, Jiegiong Zhou, Jiuying Liu, Yuanyuan Zhong, Yan Zhou, Xiaonan Cai, Linling Yu, Liqin Hu, Han Xiao* and Aifen Zhou*



Multi-omics analysis detected multiple pathways by which pomegranate punicalagin exerts its biological effects in modulating host-microbiota interactions in murine colitis models

Fang Liu, Allen D. Smith, Thomas T. Y. Wang, Quynhchi Pham, Haiyan Yang* and Robert W. Li*



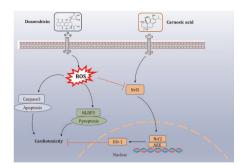
The effect of preparation temperature and composition on bigel performance as fat replacers

Bela Vershkov and Maya Davidovich-Pinhas*

3849

Carnosic acid protects against doxorubicininduced cardiotoxicity through enhancing the Nrf2/HO-1 pathway

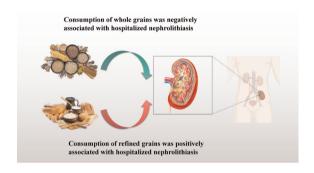
Shan Hu, Beilei Liu, Mangi Yang, Shuai Mao, Hao Ju, Zheyu Liu, Min Huang and Gang Wu*



3863

Associations between grain intake and hospitalized nephrolithiasis in Chinese adults: a case-control study

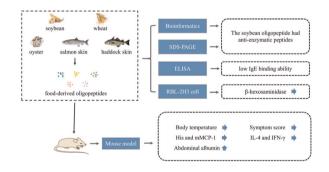
Liping Shan, Jianxiu Shi, Jia Li, Chunyu Pan, Yang Xia, Kaijun Niu, Zhenhua Li* and Song Bai*



3871

Allergenicity evaluation of five types of commercial food-derived oligopeptide products

Wenwen Xiong, Qiuyu Zhang, Junjuan Wang, Mengzhen Hao, Binghui Zeng and Huilian Che*



3880

Gut content microbiota dysbiosis and dysregulated lipid metabolism in diarrhea caused by high-fat diet in a fatigued state

Bo Qiao, Jing Liu, Na Deng, Ying Cai, Yao Bian, Yueying Wu* and Zhoujin Tan*

