

Food & Function

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IN THIS ISSUE

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Cover
See Chiara Di Lorenzo,
Mario Dell'Agli *et al.*,
pp. 1797–1807.

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2019, **10**, 1797.



Inside cover
See Xuebo Liu,
Xiang Duan *et al.*,
pp. 1808–1815.

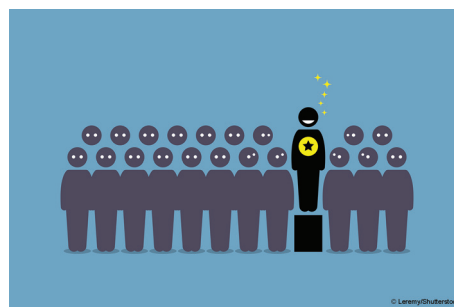
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2019, **10**, 1808.

EDITORIAL

1786

Outstanding Reviewers for *Food & Function* in 2018

We would like to take this opportunity to highlight the Outstanding Reviewers for *Food & Function* in 2018, as selected by the editorial team for their significant contribution to the journal.



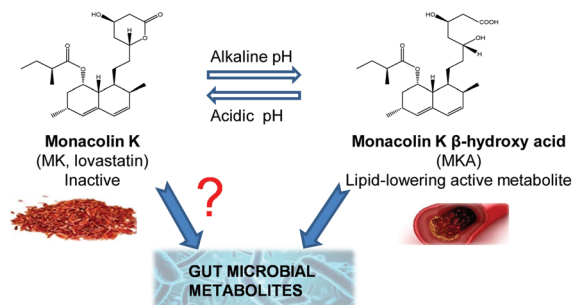
COMMUNICATIONS

1787

Re-examining the role of the gut microbiota in the conversion of the lipid-lowering statin monacolin K (lovastatin) into its active β -hydroxy acid metabolite

D. Beltrán, M. D. Frutos-Lisón, J. C. Espín and R. García-Villalba*

The inter-conversion between MK and MKA depends on the pH whereas MKA was unequivocally catabolised by the gut microbiota.



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For pre-submission queries please contact

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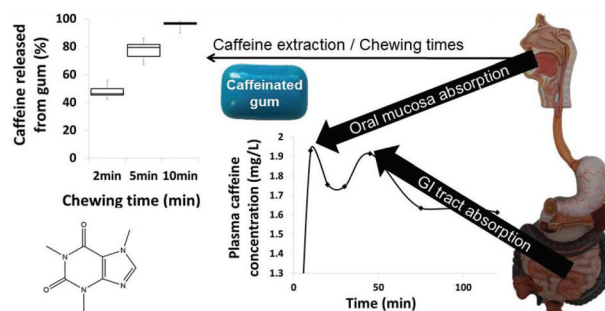
COMMUNICATIONS

1792

Caffeine release and absorption from caffeinated gums

Cecile Morris,* Sophie M. Viriot, Qurat U. A. Farooq Mirza, Gordon A. Morris and Anthony Lynn

Caffeine release increased with chewing time (2 min < 5 min < 10 min). Two plasma caffeine concentration peaks were observed suggesting that caffeine absorption occurs both through the oral mucosa and gastrointestinal tract.



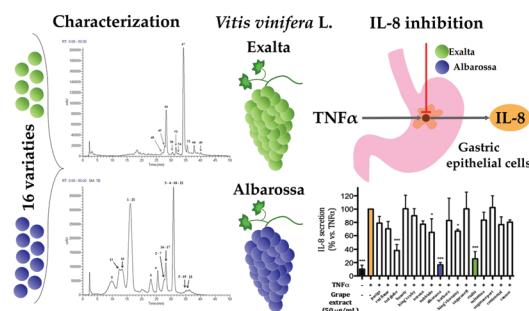
PAPERS

1797

Phenolic profiles and anti-inflammatory activities of sixteen table grape (*Vitis vinifera* L.) varieties

Francesca Colombo, Chiara Di Lorenzo,* Luca Regazzoni, Marco Fumagalli, Enrico Sangiovanni, Luis Peres de Sousa, Luigi Bavaresco, Diego Tomasi, Antonella Bosso, Giancarlo Aldini, Patrizia Restani and Mario Dell'Agli*

Fresh grapes contain phenolic compounds that have shown to exert antioxidant and anti-inflammatory activities at gastric level.

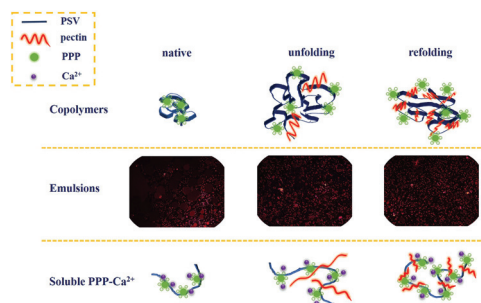


1808

Role of polysaccharide conjugation in physicochemical and emulsifying properties of egg phosvitin and the calcium binding capacity of its phosphopeptides

Yanchun Cui, Xiang Li, Mei Lu, Xuebo Liu* and Xiang Duan*

Glycosylation with pectin simultaneously improved the emulsifying properties of egg phosvitin and the calcium binding capacity of its phosphopeptides.

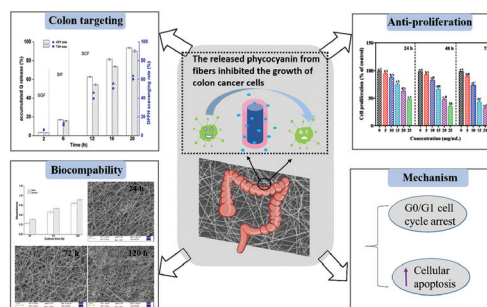


1816

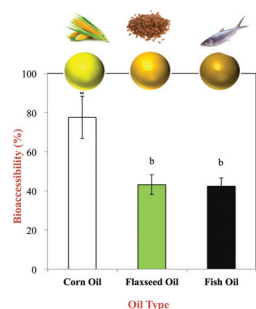
Targeted delivery of phycocyanin for the prevention of colon cancer using electrospun fibers

Peng Wen, Teng-Gen Hu, Yan Wen, Robert J. Linhardt, Min-Hua Zong, Yu-Xiao Zou and Hong Wu*

A colonic phycocyanin-loaded delivery system was constructed by coaxial electrospinning for the prevention of colon cancer.



1826

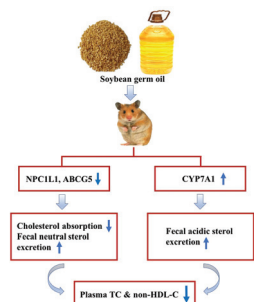


Fabrication of plant-based vitamin D₃-fortified nanoemulsions: influence of carrier oil type on vitamin bioaccessibility

Anna Larissa Schoener, Ruojie Zhang, Shanshan Lv, Jochen Weiss and David Julian McClements*

The influence of carrier oil type (corn, fish, or flaxseed oil) on the production, stability, and simulated gastrointestinal behavior of vitamin-fortified nanoemulsions was studied.

1836

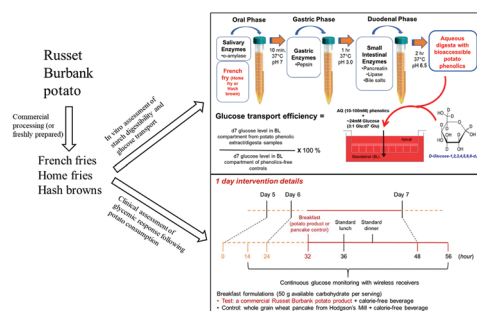


Soybean germ oil reduces blood cholesterol by inhibiting cholesterol absorption and enhancing bile acid excretion

Hanyue Zhu, Jingnan Chen, Zouyan He, Wangjun Hao, Jianhui Liu, Erika Kwek, Yimin Zhao, Ka Ying Ma, Wen-Sen He and Zhen-Yu Chen*

Soybean germ oil is beneficial in management of hypercholesterolemia in hamsters fed a high cholesterol diet.

1846

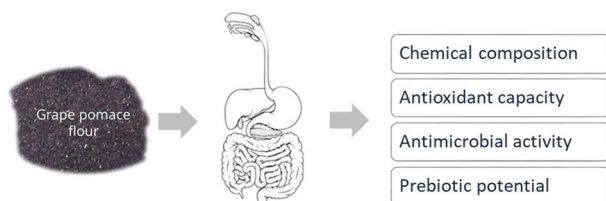


Potato product form impacts *in vitro* starch digestibility and glucose transport but only modestly impacts 24 h blood glucose response in humans

Min Li, Judy George, Stephanie Hunter, Bruce Hamaker, Richard Mattes and Mario G. Ferruzzi*

Potatoes are rich in phenolic compounds which have been reported to impact starch digestion and intestinal glucose transport in model systems through phenolic–starch interactions.

1856



Impact of *in vitro* gastrointestinal digestion on the chemical composition, bioactive properties, and cytotoxicity of *Vitis vinifera* L. cv. Syrah grape pomace extract

J. R. Costa, M. Amorim, A. Vilas-Boas, R. V. Tonon, L. M. C. Cabral, L. Pastrana and M. Pintado*

Grape pomace (GP) is a major byproduct worldwide, and it is well known for its bioactive compounds, such as fibers and phenolic compounds, that are popular for their impact upon human health, including in gastrointestinal health.

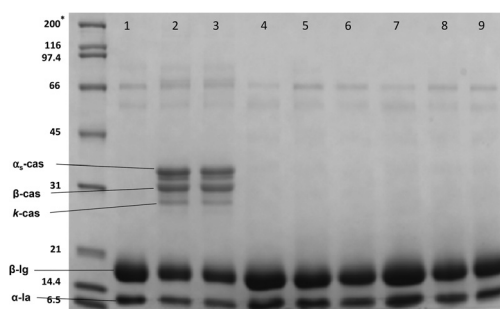
PAPERS

1870

Effect of protein composition of a model dairy matrix containing various levels of beta-casein on the structure and anti-inflammatory activity of *in vitro* digestates

N. Rafiee Tari, E. Arranz and M. Corredig*

An increasing body of evidence demonstrates that differences in protein composition in the food matrix can significantly affect its biological functionality.

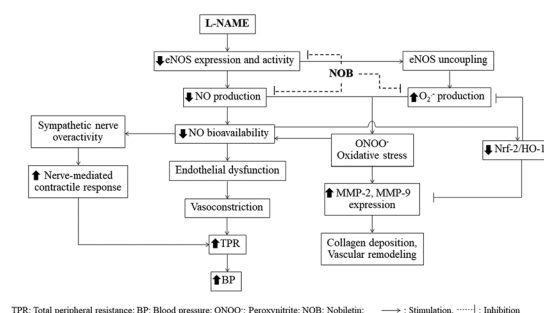


1880

Nobiletin alleviates vascular alterations through modulation of Nrf-2/HO-1 and MMP pathways in L-NAME induced hypertensive rats

Prapassorn Potue, Chutamas Wunpathe, Pucharawipa Maneesai, Upa Kukongviriyapan, Parichat Prachaney and Poungrat Pakdeechote*

Nobiletin alleviates L-NAME-induced vascular dysfunction and remodeling and superoxide production in rats.

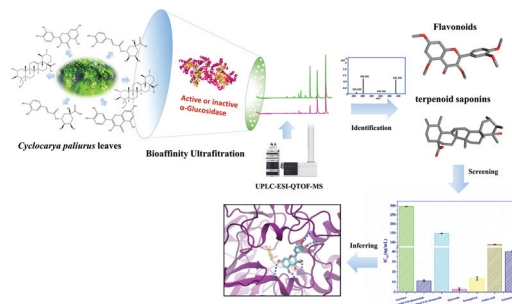


1893

Identification of α -glucosidase inhibitors from *Cyclocarya paliurus* tea leaves using UF-UPLC-Q/TOF-MS/MS and molecular docking

Zi-wan Ning, Li-xiang Zhai, Tao Huang, Jiao Peng, Die Hu, Hai-tao Xiao,* Bo Wen, Cheng-yuan Lin, Ling Zhao and Zhao-xiang Bian*

11 potential α -glucosidase inhibitors in leaves of *Cyclocarya paliurus* were quickly identified by UF-UPLC-Q/TOF-MS/MS, and their inhibitory activities were verified *in vitro* and *in vivo*, as well as docked with homology model.

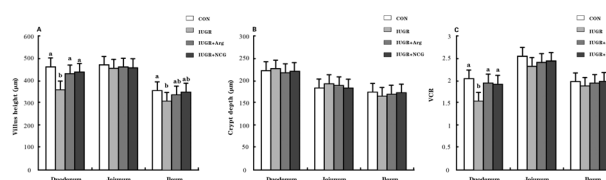


1903

Dietary N-carbamylglutamate and L-arginine supplementation improves intestinal energy status in intrauterine-growth-retarded suckling lambs

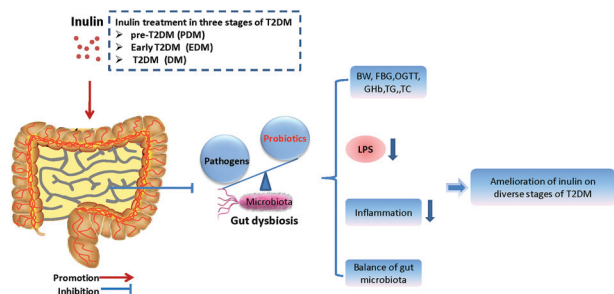
Hao Zhang, Along Peng, Shuang Guo, Mengzhi Wang, Juan J. Looor and Hongrong Wang*

This study explores the roles of L-arginine (Arg) and N-carbamylglutamate (NCG) supplementation in the diet in intestine damage, energy state, as well as the associated protein kinase signaling pathways activated by AMP in intrauterine growth retarded (IUGR) suckling lambs.



PAPERS

1915

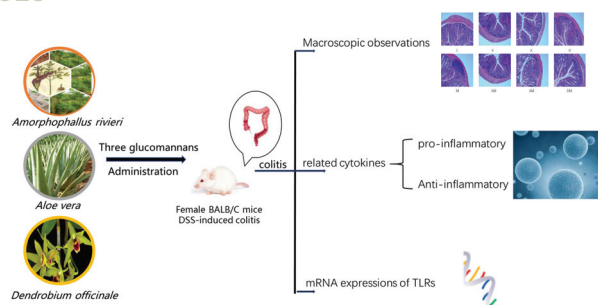


Dietary inulin alleviates diverse stages of type 2 diabetes mellitus *via* anti-inflammation and modulating gut microbiota in db/db mice

Ke Li, Li Zhang, Jing Xue, Xiaoli Yang, Xiaoying Dong, Liping Sha, Hong Lei, Xiaoxia Zhang, Lili Zhu, Zhen Wang, Xiaorong Li, Hao Wang, Ping Liu,* Youping Dong* and Lanjie He*

Type 2 diabetes mellitus (T2DM) is closely correlated with chronic low-grade inflammation and gut dysbiosis.

1928

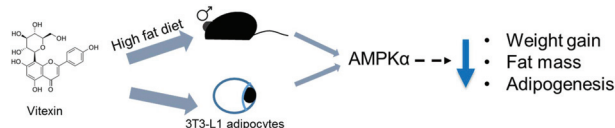


Protective effect of three glucomannans from different plants against DSS induced colitis in female BALB/c mice

Liu-Jing Zhang, Xiao-Jun Huang, Xiao-Dan Shi, Hai-Hong Chen, Steve W. Cui and Shao-Ping Nie*

Glucomannans (GMs) from diverse natural plants have great potentiality in enhancing the host immune system.

1940

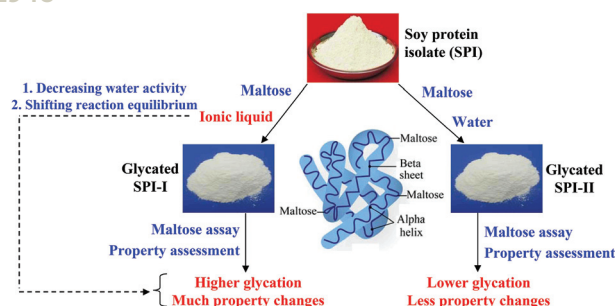


Vitexin ameliorates high fat diet-induced obesity in male C57BL/6J mice *via* the AMPK α -mediated pathway

Ye Peng, Quancai Sun, Weidong Xu, Yuanqing He, Wengang Jin, Li Yuan and Ruichang Gao*

Vitexin, a bioactive compound isolated from hawthorn leaf extracts, can prevent HFD-induced obesity/adipogenesis *via* the AMPK α mediated pathway.

1948



Structure and property changes of the soy protein isolate glycosylated with maltose in an ionic liquid through the Maillard reaction

Wei Xu and Xin-Huai Zhao*

An ionic liquid is verified to enhance maltose-glycation and property changes of soy protein isolate through two chemical mechanisms.

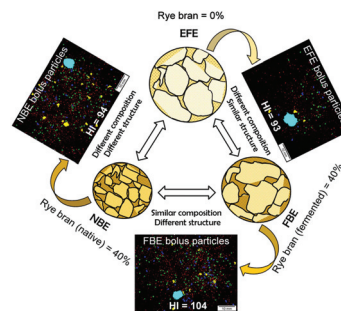
PAPERS

1958

The effect of structure and texture on the breakdown pattern during mastication and impacts on *in vitro* starch digestibility of high fibre rye extrudates

Syed Ariful Alam,* Saara Pentikäinen, Johanna Närväinen, Kati Katina, Kaisa Poutanen and Nesli Sozer

Structural attributes of the extrudates rather than core composition dictates breakdown pattern during mastication and *in vitro* starch digestibility.

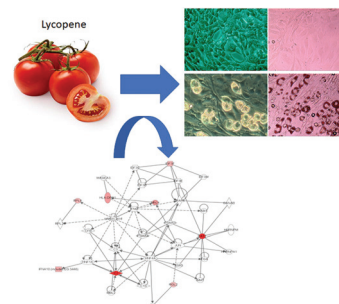


1974

Lycopene inhibits hepatic stellate cell activation and modulates cellular lipid storage and signaling

Monique de Barros Elias,* Felipe Leite Oliveira, Fatima Costa Rodrigues Guma, Renata Brum Martucci, Radovan Borojevic and Anderson Junger Teodoro*

Hepatic stellate cells are liver-specific perivascular cells, identified as the major source of collagen in liver fibrosis, following their activation and conversion to myofibroblast-like cells.

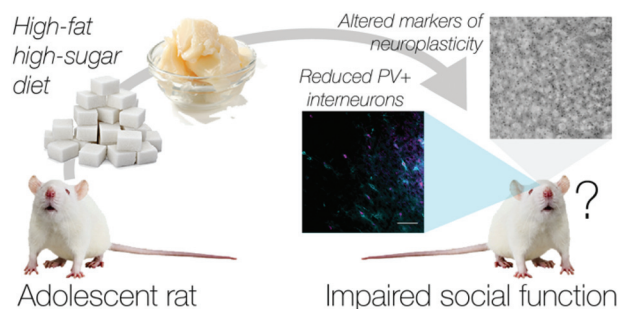


1985

A high-fat high-sugar diet in adolescent rats impairs social memory and alters chemical markers characteristic of atypical neuroplasticity and parvalbumin interneuron depletion in the medial prefrontal cortex

Amy C. Reichelt,* Gabrielle D. Gibson, Kirsten N. Abbott and Dominic J. Hare*

A hypercaloric diet given to adolescent rats induces social memory deficits and reduced neurochemical markers of normal social development.

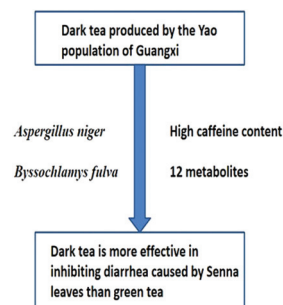


1999

Animal study of the anti-diarrhea effect and microbial diversity of dark tea produced by the Yao population of Guangxi

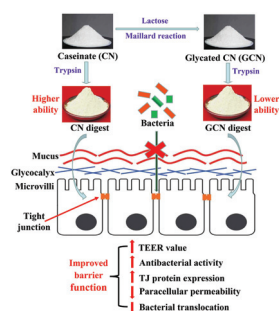
Lan Mo, Zhen Zeng, Yun Li, Dan Li, Chang-yu Yan, Sui Xiao* and Ya-hui Huang*

Chinese dark teas (CDTs) are a special type of tea traditionally consumed by ethnic minorities around the border regions of China.



PAPERS

2010

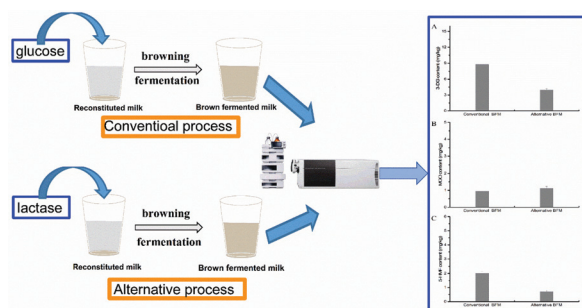


Influence of the Maillard-type caseinate glycation with lactose on the intestinal barrier activity of the caseinate digest in IEC-6 cells

Jia Shi and Xin-Huai Zhao*

The glycated caseinate digest of the Maillard-type shows lower capability than the caseinate digest to enhance the intestinal barrier function of IEC-6 cells.

2022

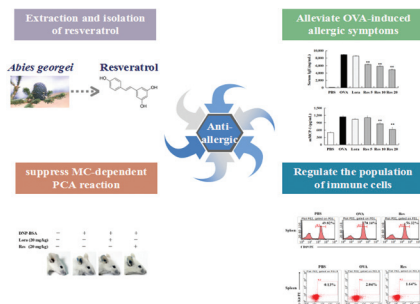


Mitigation of 3-deoxyglucosone and 5-hydroxymethylfurfural in brown fermented milk via an alternative browning process based on the hydrolysis of endogenous lactose

Zhonghui Han, Jianxin Gao, Jiaqi Li, Yan Zhang,* Yanan Yang and Shuo Wang*

An alternative browning process based on the hydrolysis of endogenous lactose instead of the external addition of glucose was established to mitigate the production of unhealthy Maillard reaction products.

2030

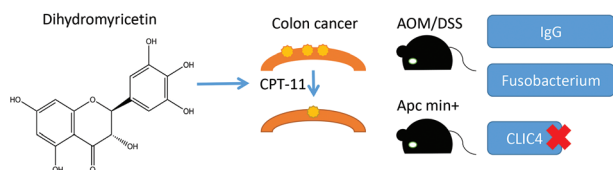


Attenuation of allergic responses following treatment with resveratrol in anaphylactic models and IgE-mediated mast cells

Ya-Fen Zhang, Qing-Mei Liu, Yuan-Yuan Gao, Bo Liu, Hong Liu, Min-Jie Cao, Xian-Wen Yang and Guang-Ming Liu*

Resveratrol isolated from *Abies georgei* exhibits therapeutic potential for allergic disease induced by food allergens.

2040



Synergy between dihydromyricetin intervention and irinotecan chemotherapy delays the progression of colon cancer in mouse models

Xiao-Hui Zhu, He-Dong Lang, Xiao-Lan Wang, Suo-Cheng Hui, Min Zhou, Chao Kang, Long Yi, Man-Tian Mi and Yong Zhang*

Dihydromyricetin may be a favorable chemotherapeutic coadjuvant agent to reduce colonic tumors via different mechanisms in two mouse models.

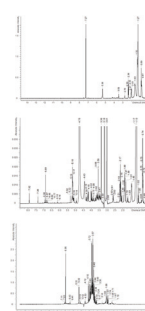
PAPERS

2050

Chemical characterization and bioactive properties of a coffee-like beverage prepared from *Quercus cerris* kernels

Diana Pinto, Santiago Diaz Franco, Ana Margarida Silva, Snezana Cupara, Marijana Koskovic, Ksenija Kojicic, Sónia Soares, Francisca Rodrigues,* Stefania Sut, Stefano Dall'Acqua and M. Beatriz P. P. Oliveira

In the present study, a coffee-like beverage was prepared from *Quercus cerris* seeds.

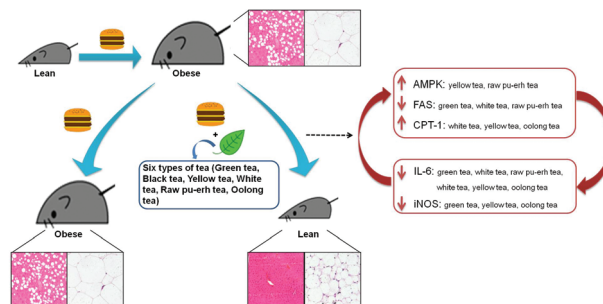


2061

Six types of tea reduce high-fat-diet-induced fat accumulation in mice by increasing lipid metabolism and suppressing inflammation

Chen Liu, Yuntong Guo, Lingli Sun, Xingfei Lai, Qiuhua Li, Wenji Zhang, Limin Xiang, Shili Sun* and Fanrong Cao*

A high-fat diet results in obesity because of white fat accumulation.

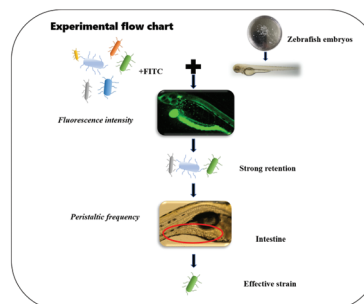


2075

Screening of intestinal peristalsis-promoting probiotics based on a zebrafish model

Youyou Lu, Junxue Zhang, Huaxi Yi, Zhe Zhang and Lanwei Zhang*

The retention ability of strains was evaluated by fluorescence labelling and was elaborated on intestinal peristalsis-promoting probiotics, using zebrafish as a model.

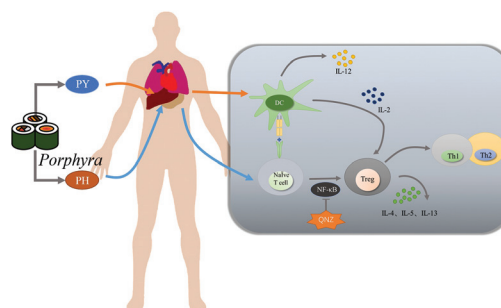


2083

Two polysaccharides from *Porphyra* modulate immune homeostasis by NF- κ B-dependent immunocyte differentiation

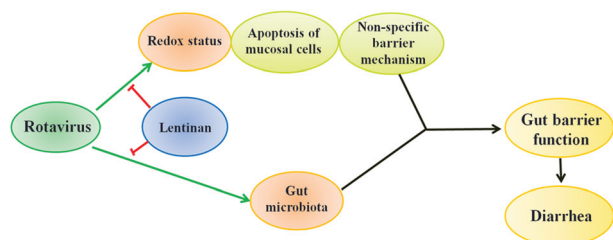
Linglin Fu, Yi Qian, Chong Wang, Menghua Xie, Jianjian Huang and Yanbo Wang*

Porphyra polysaccharides possess multiple pharmacological activities, such as immunoregulatory, anti-tumor and anti-inflammatory effects, but the specific underlying mechanisms are not fully understood.



PAPERS

2094

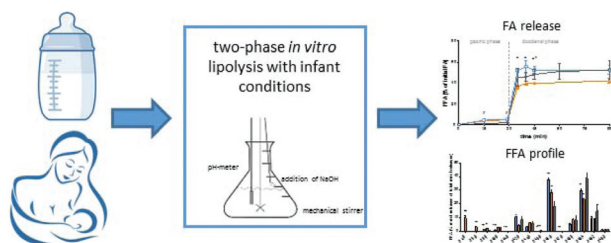


Lentinan administration relieves gut barrier dysfunction induced by rotavirus in a weaned piglet model

Xiangbing Mao,* Haiyan Hu, Xuechun Xiao, Daiwen Chen, Bing Yu, Jun He, Jie Yu, Ping Zheng, Junqiu Luo, Yuheng Luo and Jianping Wang

Rotavirus (RV) is a pathogen that induces severe diarrhea in infants and young animals.

2102

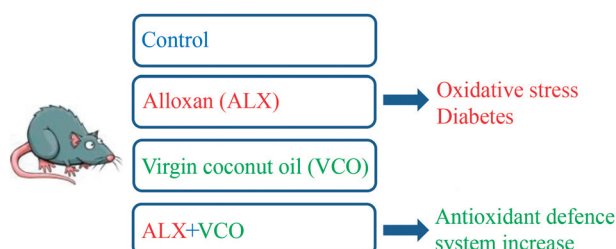


Free fatty acid release from vegetable and bovine milk fat-based infant formulas and human milk during two-phase *in vitro* digestion

Jeske H. J. Hageman,* Jaap Keijer, Trine Kastrup Dalsgaard, Lara W. Zeper, Frédéric Carrière, Anouk L. Feitsma and Arie G. Nieuwenhuizen

The profile of fatty acids released during *in vitro* digestion of vegetable and bovine milk fat-based infant formula differ.

2114

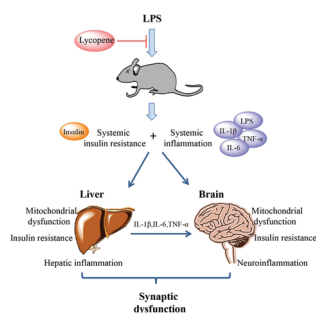


The protective role of virgin coconut oil on the alloxan-induced oxidative stress in the liver, kidneys and heart of diabetic rats

Siniša Đurašević,* Nebojša Jasnić, Marko Prokić, Ilijana Grigorov, Vesna Martinović, Jelena Đorđević and Slađan Pavlović

Our results show that VCO supplementation ameliorates some toxic effects of alloxan induced diabetes, and that the changes are tissue specific.

2125



Lycopene ameliorates systemic inflammation-induced synaptic dysfunction via improving insulin resistance and mitochondrial dysfunction in the liver–brain axis

Jia Wang, Qianhui Zou, Yao Suo, Xintong Tan, Tian Yuan, Zhigang Liu and Xuebo Liu*

Lycopene supplementation effectively attenuated systemic inflammation-induced synaptic dysfunction through ameliorating insulin resistance, mitochondrial dysfunction and inflammatory response in the mouse liver–brain axis.

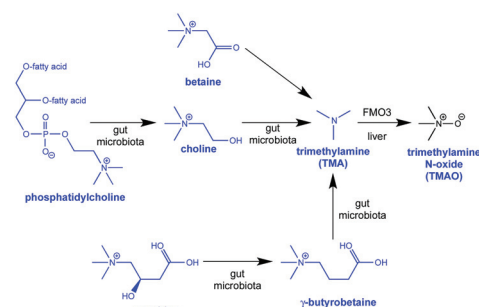
PAPERS

2138

A Mediterranean diet does not alter plasma trimethylamine *N*-oxide concentrations in healthy adults at risk for colon cancer

Laura E. Griffin, Zora Djuric, Chris J. Angioletta, Cassie M. Mitchell, Mary E. Baugh, Kevin P. Davy and Andrew P. Neilson*

A Mediterranean diet does not reduce circulating TMAO, a metabolite that is associated with chronic disease risks.

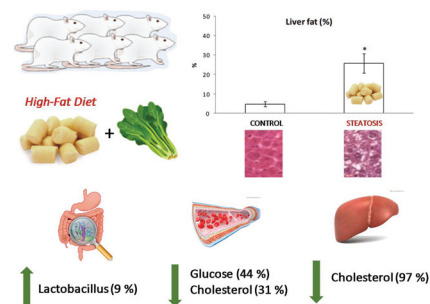


2148

Spinach consumption ameliorates the gut microbiota and dislipaemia in rats with diet-induced non-alcoholic fatty liver disease (NAFLD)

L. I. Elvira-Torales, M. J. Periago, R. González-Barrio, N. Hidalgo, I. Navarro-González, C. Gómez-Gallego, D. Masuero, E. Soini, U. Vrhovsek and F. J. García-Alonso*

In rats with hepatic steatosis, spinach intake increased gut *Lactobacillus* and lowered cholesterol and glucose.

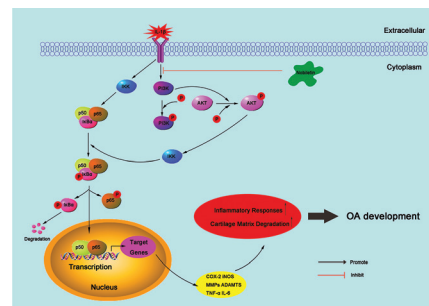


2161

Inhibiting the PI3K/AKT/NF- κ B signal pathway with nobiletin for attenuating the development of osteoarthritis: *in vitro* and *in vivo* studies

Linzhen Xie, Huanguang Xie, Chunhui Chen, Zhenyu Tao, Chuanxu Zhang and Leyi Cai*

Osteoarthritis (OA), an age-related degenerative disease, is characterized by progressive degradation of the articular cartilage.

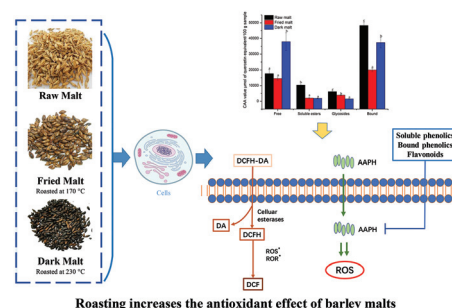


2176

Comparative study on the phytochemical profiles and cellular antioxidant activity of phenolics extracted from barley malts processed under different roasting temperatures

Yongsheng Chen, Junqing Huang, Jing Hu, Rian Yan* and Xiang Ma*

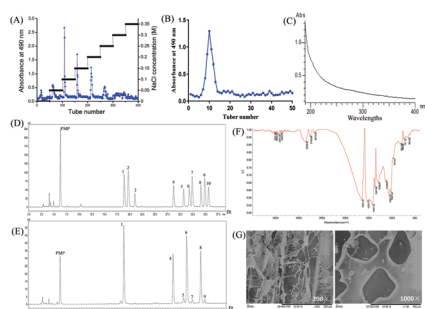
Consumption of cereal foods has been related to health improvement, which is partly because of their phytochemicals.



Roasting increases the antioxidant effect of barley malts

PAPERS

2186

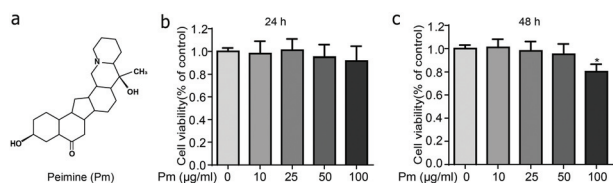


Immunomodulatory effects of an acidic polysaccharide fraction from herbal *Gynostemma pentaphyllum* tea in RAW264.7 cells

Daoyuan Ren, Yan Zhao,* Quan Zheng, Aamina Alim and Xingbin Yang*

A new acidic polysaccharide (GTP-3) with a molecular weight of 2.49×10^6 Da was extracted and purified from *Gynostemma pentaphyllum* tea.

2198

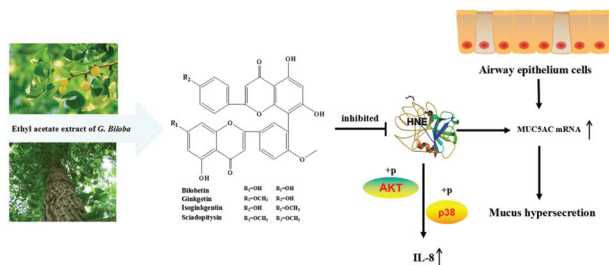


Peimine inhibits the IL-1 β induced inflammatory response in mouse articular chondrocytes and ameliorates murine osteoarthritis

Zucheng Luo, Binbin Zheng, Bingjie Jiang, Xinghe Xue, Enxing Xue* and Yulong Zhou*

Osteoarthritis (OA) is a common arthrosis characterized by degeneration and inflammation of articular cartilage.

2209

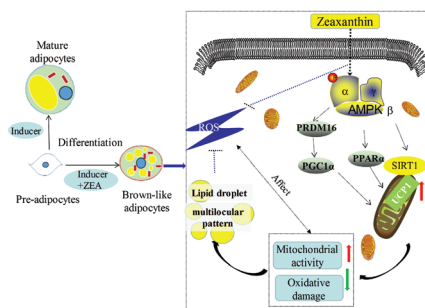


Evaluation of the anti-inflammatory properties of the active constituents in *Ginkgo biloba* for the treatment of pulmonary diseases

Zhu Tao, Wenwen Jin, Mingzhang Ao, Shengbing Zhai, Hang Xu and Longjiang Yu*

Biflavones from *G. biloba* inhibit leukocyte activity and influence mucus hypersecretion as well as the secretion of IL-8.

2221



Zeaxanthin promotes mitochondrial biogenesis and adipocyte browning via AMPK α 1 activation

Meihong Liu, Mingzhu Zheng, Dan Cai, Jiahua Xie, Zhibo Jin, Huimin Liu* and Jingsheng Liu*

Zeaxanthin (ZEA) increased UCP1 expression and promoted the expression of brown adipogenic markers and mitochondrial biogenesis, which involved the AMPK α 1 activation.

PAPERS

2234

Exploring the chemical and bioactive properties of *Hibiscus sabdariffa* L. calyces from Guinea-Bissau (West Africa)

Inès Jabeur, Eliana Pereira, Cristina Caleja, Ricardo C. Calhelha, Marina Soković, Luís Catarino, Lillian Barros* and Isabel C. F. R. Ferreira*

Hibiscus sabdariffa L. exhibited beneficial properties and represents a promising species for food applications.



Hibiscus sabdariffa L. calyces:

- Nutritional composition;
- Chemical (free sugars, organic acids, fatty acids and tocopherols) composition.

Infusion and hydroethanolic extracts:

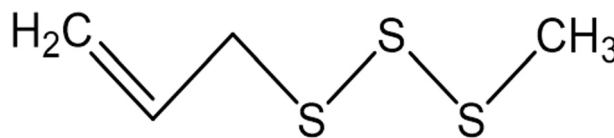
- Phenolic composition;
- Antioxidant, anti-inflammatory, cytotoxicity and antimicrobial activity.

2244

Allyl methyl trisulfide protected against acetaminophen (paracetamol)-induced hepatotoxicity by suppressing CYP2E1 and activating Nrf2 in mouse liver

Hui-Juan Zhao, Ming-Jun Li, Meng-Ping Zhang, Meng-Ke Wei, Li-Ping Shen, Min Jiang and Tao Zeng*

In order to investigate the protective effects of allyl methyl trisulfide (AMTS) on acetaminophen (APAP)-induced hepatotoxicity, 75 KM mice were randomized into 5 groups, *i.e.* a control group, an APAP group, and three AMTS/APAP groups.



allyl methyl trisulfide (AMTS)

CORRECTION

2254

Correction: Lipid composition modulates the intestine digestion rate and serum lipid status of different edible oils: a combination of *in vitro* and *in vivo* studies

Zhan Ye, Chen Cao, Ruizhi Li, Peirang Cao, Qiu Li and Yuanfa Liu*