## Food & Function

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#### IN THIS ISSUE

ISSN 2042-650X CODEN FFOUAI 9(1) 1-658 (2018)



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**Inside cover** See Xian Wu, Hang Xiao *et al.*, pp. 87–95.

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#### EDITORIAL

#### 20

### The Seventh Biennial Berry Health Benefits Symposium

Navindra P. Seeram\* and Britt Burton-Freeman\*

Guest Editors Navindra Seeram and Britt Burton-Freeman introduce the themed issue on work presented at the Seventh Biennial Berry Health Benefits Symposium, held in California, US.



#### REVIEWS

#### 22

#### Enhanced delivery of lipophilic bioactives using emulsions: a review of major factors affecting vitamin, nutraceutical, and lipid bioaccessibility

#### David Julian McClements

Many researchers are currently developing emulsion-based delivery systems to increase the bioavailability of lipophilic bioactive agents, such as oil-soluble vitamins, nutraceuticals, and lipids. This article reviews recent research in this area.



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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 OWF, UK.

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#### **REVIEWS**

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### Molecular targets and mechanisms of bioactive peptides against metabolic syndromes

Shanshan Li, Ling Liu, Guoqing He and Jianping Wu\*

Bioactive peptides have beneficial effects on blood pressure, inflammation, obesity, and T2D, indicating their great potential as functional foods/nutraceuticals against metabolic syndromes.



DRUGS

XXXXXXX

CHOLESTEROL LEVELS

MARKETED FOODS

FUNGAL

- ...

DIFTARY

#### 53

### Molecular actions of hypocholesterolaemic compounds from edible mushrooms

Alicia Gil-Ramírez, Diego Morales\* and Cristina Soler-Rivas

Edible mushrooms contain bioactive compounds able to modulate the expression of genes related to absorption, biosynthesis and transport of cholesterol and regulation of its homeostasis.

#### 70

#### Dietary fruits and arthritis

Arpita Basu,\* Jace Schell and R. Hal Scofield

Arthritis is a global health concern affecting a significant proportion of the population and associated with reduced quality of life.



#### PAPERS

#### 78

#### Pepsin egg white hydrolysate ameliorates metabolic syndrome in high-fat/high-dextrose fed rats

S. Moreno-Fernández, M. Garcés-Rimón, C. González, J. A. Uranga, V. López-Miranda, G. Vera and M. Miguel\*

The aim of this study was to examine the effect of a pepsin egg white hydrolysate (EWH) on metabolic complications using a high-fat/high-dextrose diet-induced Metabolic Syndrome (MetS) experimental model.









A metabolite of nobiletin, 4'-demethylnobiletin and atorvastatin synergistically inhibits human colon cancer cell growth by inducing G0/G1 cell cycle arrest and apoptosis

X. Wu,\* M. Song, P. Qiu, F. Li, M. Wang, J. Zheng, Q. Wang, F. Xu and H. Xiao\*

Combining different chemopreventive agents is a promising strategy to reduce cancer incidence and mortality due to potential synergistic interactions between these agents.

### Metabolic fate of strawberry polyphenols after chronic intake in healthy older adults

Amandeep K. Sandhu, Marshall G. Miller, Nopporn Thangthaeng, Tammy M. Scott, Barbara Shukitt-Hale, Indika Edirisinghe and Britt Burton-Freeman\*

Strawberry (poly)phenols produce an array of metabolites, some that persist in plasma while others are acutely enhanced when eaten chronically.

## Moderation of hyperuricemia in rats *via* consuming walnut protein hydrolysate diet and identification of new antihyperuricemic peptides

Qingyong Li, Xiaoyan Kang, Chuanchao Shi, Yujuan Li, Kaustav Majumder, Zhengxiang Ning and Jiaoyan Ren\*

Walnut-derived antihyperuricemic peptides were purified and identified based on decreasing serum uric acid level and inhibiting xanthine oxidase.

Zein-derived peptides as nanocarriers to increase the water solubility and stability of lutein

Yan Jiao, Xiqun Zheng, Ying Chang, Dajing Li, Xiaohong Sun and Xiaolan Liu\*

Zein and its derived peptides have been used as nanocarriers for bioactive components.



#### 124

#### Preventive effects of taurine against D-galactoseinduced cognitive dysfunction and brain damage

Dom-Gene Tu, Yao-Ling Chang, Chung-Hsi Chou, Yi-Ling Lin, Chia-Chun Chiang, Yuan-Yen Chang and Yi-Chen Chen\*

Oxidative stress arising from life processes or environmental influences and its resultant cellular dysfunctions are major causes of neurodegenerative disorders.

#### 134

#### Alleviation of oxidative stress-mediated nephropathy by dietary fenugreek (*Trigonella foenum-graecum*) seeds and onion (*Allium cepa*) in streptozotocin-induced diabetic rats

Seetur R. Pradeep and Krishnapura Srinivasan\*

Fenugreek seeds and onion ameliorated oxidative stress in the kidneys accompanying diabetes mellitus and the consequent nephropathy. Higher nutraceutical benefits were seen with the combination of these two, amounting to an additive effect.

#### 149

#### Profiling polyphenol composition by HPLC-DAD-ESI/MSn and the antibacterial activity of infusion preparations obtained from four medicinal plants

Borhane E. C. Ziani, Lillian Barros,\* Ali Z. Boumehira, Khaldoun Bachari, Sandrina A. Heleno, Maria Jose Alves and Isabel C. F. R. Ferreira\*

Infusions of *T. pallescens*, *P. verticillata* and *L. guyonianum* are a source of bioactive compounds.

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#### Chemical composition and bioactive properties of the wild mushroom *Polyporus squamosus* (Huds.) Fr: a study with samples from Romania

Andrei Mocan, Ângela Fernandes, Lillian Barros, Gianina Crișan, Marija Smiljković, Marina Soković and Isabel C. F. R. Ferreira\*

In Eastern Europe, wild mushrooms are widely collected in mountain areas and used for their medicinal properties or as healthy foods.









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Percentage users Top 10 botanicals User characteristics Reasons for use Dose form Place of purchase Who recommended the use?



#### Ginger fermented with *Schizosaccharomyces pombe* alleviates memory impairment *via* protecting hippocampal neuronal cells in amyloid beta<sub>1-42</sub> plaque injected mice

Eugene Huh, Soonmin Lim, Hyo Geun Kim, Sang Keun Ha, Ho-Young Park, Youngbuhm Huh and Myung Sook Oh\*

Ginger fermented with *S. pombe* alleviates AD-like memory dysfunction and neuronal degradation in an animal model.

### Consumption of plant food supplements in the Netherlands

Suzanne M. F. Jeurissen,\* Elly J. M. Buurma-Rethans, Marja H. Beukers, Martine Jansen-van der Vliet, Caroline T. M. van Rossum and R. Corinne Sprong

This consumption survey provides information on the consumption of plant food supplements in several subgroups of the Dutch population including children.

## *Quillaja* saponin-based hollow salt particles as solid carriers for enhancing sensory aroma with reduced sodium intake

Xiao-Wei Chen, Dan-Xia Yang, Jian Guo, Qi-Jun Ruan and Xiao-Quan Yang\*

QS-based hollow salt particles were developed that improve flavor performance with reduced sodium intake.



### The important role of salivary $\alpha$ -amylase in the gastric digestion of wheat bread starch

Daniela Freitas, Steven Le Feunteun,\* Maud Panouillé and Isabelle Souchon

Salivary  $\alpha$ -amylase (HSA) from the bolus significantly contributed to the digestion of starch during the dynamic gastric digestion of wheat bread.

#### 209

#### Extraction of triterpenoids and phenolic compounds from *Ganoderma lucidum*: optimization study using the response surface methodology

T. Oludemi, L. Barros, M. A. Prieto, S. A. Heleno, M. F. Barreiro and I. C. F. R. Ferreira\*

The extraction of triterpenoids and phenolic compounds from *Ganoderma lucidum* was optimized by response surface methodology, using heat and ultrasound assisted extraction techniques.

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Specific protein supplementation using soya, casein or whey differentially affects regional gut growth and luminal growth factor bioactivity in rats; implications for the treatment of gut injury and stimulating repair

T. Marchbank, N. Mandir, D. Calnan, R. A. Goodlad, T. Podas and R. J. Playford\*

Differential enhancement of luminal growth factor bioactivity and targeted regional gut growth occurs dependent on dietary protein supplement.

#### 234

#### Quercetin and fisetin enhanced the small intestine cellular uptake and plasma levels of *epi*-catechins in *in vitro* and *in vivo* models

J.-O. Chung, S.-B. Lee, K.-H. Jeong, J-H. Song, S.-K. Kim, K.-M. Joo, H.-W. Jeong, J.-K. Choi, J.-K. Kim, W.-G. Kim, S.-S. Shin and S.-M. Shim\*

The catechol-containing flavonoids quercetin and fisetin could positively affect the absorption of catechins due to their strong affinity for COMT, which can methylate and cause the excretion of catechins.

#### 243

#### Amentoflavone improves cardiovascular dysfunction and metabolic abnormalities in high fructose and fat diet-fed rats

Li Qin, Ying Zhao, Bin Zhang and Yan Li\*

Metabolic syndrome (MS) is a leading cause of mortality and morbidity in Western countries.















Inhibition of advanced glycation endproducts during fish sausage preparation by transglutaminase and chitosan oligosaccharides induced enzymatic glycosylation

Jing Wang, Long Zou, Fangzhou Yuan, Liangtao Lv, Shenglan Tian, Zhenxing Li\* and Hong Lin

A non-antioxidative method in which glycosylation induced by transglutaminase "replaced" glycation to inhibit the formation of AGEs in real foods.

### The protective effect of phloretin in osteoarthritis: an *in vitro* and *in vivo* study

Wenhao Zheng, Chunhui Chen, Chuanxu Zhang, Leyi Cai and Hua Chen\*

Osteoarthritis (OA) is a degenerative joint disease characterized by the degradation and inflammation of cartilage.

## Structural elucidation and immunostimulatory activity of a new polysaccharide from *Cordyceps militaris*

Sixue Bi, Yongshuai Jing, Qinqin Zhou, Xianjing Hu, Jianhua Zhu, Zhongyi Guo, Liyan Song\* and Rongmin Yu\*

The chemical structure of new polysaccharide (CMPB90-1) obtained from *Cordyceps militaris* was elucidated, and its strengthening effects on immunostimulatory activities of lymphocytes and inducing effects on M1 polarization of macrophages were evaluated.

## Structure characterization of a novel polysaccharide from *Hericium erinaceus* fruiting bodies and its immunomodulatory activities

Fangfang Wu, Chunhui Zhou, Dandan Zhou, Shiyi Ou, Xiaoai Zhang and Huihua Huang\*

*Hericium erinaceus* polysaccharide (HEP-S) can significantly stimulate the immunomodulatory activity on murine macrophages and spleen lymphocytes.

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#### 307

#### A pilot study on clinical pharmacokinetics and preclinical pharmacodynamics of (+)-epicatechin on cardiometabolic endpoints

A. Moreno-Ulloa, N. Nájera-García, M. Hernández, I. Ramírez-Sánchez, P. R. Taub, Y. Su, E. Beltrán-Partida, G. Ceballos, S. Dugar, G. Schreiner, B. M. Best, T. P. Ciaraldi, R. R. Henry and F. Villarreal\*

We reported that (–)-epicatechin can stimulate mitochondria biogenesis and improve metabolism.

#### 320

#### Physicochemical stability, antioxidant properties and bioaccessibility of $\beta$ -carotene in orange oil-inwater beverage emulsions: influence of carrier oil types

Erika Meroni\* and Vassilios Raikos

The bioaccessibility of  $\beta$ -carotene in beverage emulsions was enhanced by modifying the lipid composition of the dispersed phase.

#### 331

#### Bioavailability of hydroxycinnamates in an instant green/roasted coffee blend in humans. Identification of novel colonic metabolites

Miren Gómez-Juaristi, Sara Martínez-López, Beatriz Sarria, Laura Bravo\* and Raquel Mateos\*

Reduced forms of hydroxycinnamates as new microbial metabolites after intake of a green/roasted coffee blend, together with the predominant phase II metabolites of reduced hydroxycinnamic acids, represented the most abundant group of colonic metabolites.

#### 344

#### Capsaicin inhibits the metastasis of human papillary thyroid carcinoma BCPAP cells through the modulation of the TRPV1 channel

Shichen Xu, Li Zhang, Xian Cheng, Huixin Yu, Jiandong Bao and Rongrong Lu\*

Capsaicin inhibits metastasis of human papillary thyroid carcinoma BCPAP cells through modulation of the TRPV1 channel.











### In vitro inhibition of pancreatic $\alpha$ -amylase by spherical and polygonal starch nanoparticles

Suisui Jiang, Man Li, Ranran Chang, Liu Xiong\* and Qingjie Sun\*

Nanoparticles are novel and fascinating materials for tuning the activities of enzymes.

#### 364



Proteinase (enzyme)

### Identification and the molecular mechanism of a novel myosin-derived ACE inhibitory peptide

Zhipeng Yu, Sijia Wu, Wenzhu Zhao,\* Long Ding, David Shiuan, Feng Chen, Jianrong Li\* and Jingbo Liu\*

The objective of this work was to identify a novel ACE inhibitory peptide from myosin using a number of *in silico* methods.



#### Piceatannol attenuates behavioral disorder and neurological deficits in aging mice *via* activating the Nrf2 pathway

Yan Zhang, Li-Hong Zhang, Xi Chen,\* Ning Zhang and Guang Li

Aging is a complex process that is accompanied by neurological damage.



## $\beta$ -Carotene bioaccessibility from biofortified maize (*Zea mays*) is related to its density and is negatively influenced by lutein and zeaxanthin

Nivedita Dube, Purna Chandra Mashurabad, Firoz Hossain, Raghu Pullakhandam,\* Longvah Thingnganing and Dinesh Kumar Bharatraj

The  $\beta$ -Carotene bioaccessibility is higher from biofortified maize and is negatively influenced by lutein and zeaxanthin.

#### 389

Quercetin inhibits renal cyst growth *in vitro* and *via* parenteral injection in a polycystic kidney disease mouse model

Yangyang Zhu, Tian Teng, Hu Wang, Hao Guo, Lei Du, Baoxue Yang, Xiaoxing Yin\* and Ying Sun\*

Autosomal dominant polycystic kidney disease (ADPKD) is a common monogenic disease characterized by massive enlargement of fluid-filled cysts in the kidney.

#### 397

#### A novel PTP1B inhibitor extracted from Ganoderma lucidum ameliorates insulin resistance by regulating IRS1-GLUT4 cascades in the insulin signaling pathway

Zhou Yang, Fan Wu, Yanming He, Qiang Zhang, Yuan Zhang, Guangrong Zhou, Hongjie Yang and Ping Zhou\*

A schematic diagram showing the IRS1-GLUT4 insulin signaling pathway influenced by PTP1B and FYGL in L6 cells.

#### 407

#### Generation of dipeptidyl peptidase IV (DPP-IV) inhibitory peptides during the enzymatic hydrolysis of tropical banded cricket (*Gryllodes sigillatus*) proteins

Alice B. Nongonierma, Candice Lamoureux and Richard J. FitzGerald\*

Cricket (*Gryllodes sigillatus*) protein hydrolysates inhibit dipeptidyl peptidase IV (DPP-IV) *in vitro*.

#### 417

#### The mechanism of reduced IgG/IgE-binding of β-lactoglobulin by pulsed electric field pretreatment combined with glycation revealed by ECD/FTICR-MS

Wenhua Yang, Zongcai Tu,\* Hui Wang,\* Lu Zhang, Igor A. Kaltashov, Yunlong Zhao, Chendi Niu, Honglin Yao and Wenfeng Ye

PEF pretreatment significantly reduced the IgG/IgE-binding ability of  $\beta$ -Lg by the modification of linear epitopes and destruction of conformational epitopes.













#### Hypoglycemic and hypolipidemic effects of anthocyanins extract from black soybean seed coat in high fat diet and streptozotocin-induced diabetic mice

Zhongqin Chen, Cong Wang, Yuxiang Pan, Xudong Gao and Haixia Chen\*

This study demonstrated the hypoglycemic and hypolipidemic effects of anthocyanins extract from black soybean *in vitro* and *in vivo*.

### Evaluation of the *in vivo* acute antiinflammatory response of curcumin-loaded nanoparticles

Mariana de Almeida, Bruno Ambrósio da Rocha, Cristhian Rafael Lopes Francisco, Cristiane Grella Miranda, Priscila Dayane de Freitas Santos, Pedro Henrique Hermes de Araújo, Claudia Sayer, Fernanda Vitória Leimann,\* Odinei Hess Gonçalves and Ciomar Aparecida Bersani-Amado

Improved antiinflammatory activity of curcumin NPs.

#### Prophylactic role of vitamin K supplementation on vascular inflammation in type 2 diabetes by regulating the NF-κB/Nrf2 pathway *via* activating Gla proteins

Anjum Dihingia, Dibyajyoti Ozah, Pranab Kumar Baruah, Jatin Kalita and Prasenjit Manna\*

There is no previous study that has examined the relationship between circulating vitamin K1 (VK1) and vascular inflammation in type 2 diabetes (T2D).

#### *Aronia–citrus* juice (polyphenol-rich juice) intake and elite triathlon training: a lipidomic approach using representative oxylipins in urine

Libia Alejandra García-Flores, Sonia Medina,\* Cristina Gómez, Craig E. Wheelock, Roberto Cejuela, José Miguel Martínez-Sanz, Camille Oger, Jean-Marie Galano, Thierry Durand, Álvaro Hernández-Sáez, Federico Ferreres and Ángel Gil-Izquierdo\*

Linking aronia–citrus juice intake and oxidative stress and inflammation markers in physical activity framework.

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Healthy T2D Patientrol (n=14) (n=19

#### 476

#### Salivary endocannabinoids and *N*-acylethanolamines upon mastication of a semisolid food: implications in fat taste, appetite and food liking

Ilario Mennella, Rossella Di Monaco, Adriana Balazy, Rosalia Ferracane, Nicoletta A. Miele, Silvana Cavella and Paola Vitaglione\*

This study combined MSF and TDS methodologies to monitor salivary NAEs and ECs, fat taste, food liking and appetite in humans during pudding mastication.

#### 485

### Colloidal particles for the delivery of steroid glycosides

Krassimir P. Velikov,\* Marjolein van Ruijven, Alois K. Popp, Ashok R. Patel, Leonard M. Flendrig and Sergey M. Melnikov

Food grade colloidal particles comprising steroid glycosides with excellent stability are prepared using a liquid antisolvent precipitation method.

#### 491

#### Aggregates of octenylsuccinate oat $\beta$ -glucan as novel capsules to stabilize curcumin over food processing, storage and digestive fluids and to enhance its bioavailability

J. Liu, L. Lei, F. Ye, Y. Zhou, Heba G. R. Younis and G. Zhao\*

Aggregates of amphipathic polysaccharides in aqueous media could encapsulate and stabilize hydrophobic polyphenols and favor their bioactivity.

#### 502

#### Extracts from the edible seaweed, *Ascophyllum nodosum*, inhibit lipase activity *in vitro*: contributions of phenolic and polysaccharide components

C. Austin, D. Stewart, J. W. Allwood and G. J. McDougall\*

Ascophyllum nodosum, inhibited pancreatic lipase activity in an oil-based turbidimetric assay. Polyphenols were potent inhibitors but mixtures of polyphenols with polysaccharides also provided substantial inhibition at achievable doses.











## *Musa paradisiaca* inflorescence induces human colon cancer cell death by modulating cascades of transcriptional events

Arun K. B., Aravind Madhavan, Reshmitha T. R., Sithara Thomas and P. Nisha\*

Colorectal cancer (CRC) is one of the leading causes of cancer death, and diet plays an important role in the etiology of CRC.



Dietary compound proanthocyanidins from Chinese bayberry (*Myrica rubra* Sieb. et Zucc.) leaves attenuate chemotherapy-resistant ovarian cancer stem cell traits *via* targeting the Wnt/ $\beta$ -catenin signaling pathway and inducing G1 cell cycle arrest

Yu Zhang, Shiguo Chen, Chaoyang Wei, Gary O. Rankin, Xingqian Ye\* and Yi Charlie Chen\*

Chinese bayberry leaves are found to aid treatment of chemotherapy-resistant cancer cells.

#### Amaranth addition to enzymatically modified wheat flour improves dough functionality, bread immunoreactivity and quality

N. G. Heredia-Sandoval, A. M. Calderón de la Barca, E. Carvajal-Millán and A. R. Islas-Rubio\*

Consumers with gluten-related disorders require gluten reduced foods to avoid an immune response.

Reshaped fecal gut microbiota composition by the intake of high molecular weight persimmon tannin in normal and high-cholesterol diet-fed rats

Wei Zhu, Kuan Lin, Kaikai Li, Xiangyi Deng and Chunmei Li\*

It has been proposed that the gut microbiome may be related to obesity, and diet-induced obesity may alter the gut microbiota composition while persimmon tannin can improve it.



#### 552

# Fucoidan inhibits amyloid- $\beta$ -induced toxicity in transgenic *Caenorhabditis elegans* by reducing the accumulation of amyloid- $\beta$ and decreasing the production of reactive oxygen species

Xuelian Wang, Kaixuan Yi and Yan Zhao\*

Fucoidan treatment effectively alleviates the paralyzed phenotype induced by the accumulation of Abeta in a transgenic *Caenorhabditis elegans* (*C. elegans*) Alzheimer's disease (AD) model.

#### 561

Beyond nutrient-based food indices: a data mining approach to search for a quantitative holistic index reflecting the degree of food processing and including physicochemical properties

Anthony Fardet,\* Sanaé Lakhssassi and Aurélien Briffaz

Processing has major impacts on both the structure and composition of food and hence on nutritional value.

#### 573

#### Evaluation of protective effect of different dietary fibers on polyphenolic profile stability of maqui berry (*Aristotelia chilensis* (Molina) Stuntz) during *in vitro* gastrointestinal digestion

M. Viuda-Martos,\* R. Lucas-Gonzalez, C. Ballester-Costa, J. A. Pérez-Álvarez, L. A. Muñoz and J. Fernández-López

We investigate the protective effect of dietary fibers on the recovery and bioaccessibility indexes, and the stability of polyphenolic compounds of maqui berry powder subjected to *in vitro* gastrointestinal digestion.

#### 585

## Home food preparation techniques impacted the availability of natural antioxidants and bioactivities in kale and broccoli

Lu Yu, Boyan Gao, Yanfang Li, Thomas T. Y. Wang, Yinghua Luo, Jing Wang\* and Liangli (Lucy) Yu\*

This study evaluated the effects of grinding and chopping with/without microwaving on the health-beneficial components, and antioxidant, anti-inflammation and antiproliferation capacities of commercial kale and broccoli samples.



#### Technological Index = (LIM/NDS) x (1/Fullness Factor) x (1/a<sub>w</sub>) x (Max Stress/Shear Resistance)













## Production, optimisation and characterisation of angiotensin converting enzyme inhibitory peptides from sea cucumber (*Stichopus japonicus*) gonad

Chan Zhong, Le-Chang Sun, Long-Jie Yan, Yi-Chen Lin, Guang-Ming Liu and Min-Jie Cao\*

The purification, characterization, and molecular docking study of a novel ACE inhibitory peptide (NAPHMR) derived from sea cucumber gonad hydrolysates.

#### Immunomodulating protein aggregates in soy and whey hydrolysates and their resistance to digestion in an *in vitro* infant gastrointestinal model: new insights in the mechanism of immunomodulatory hydrolysates

Mensiena B. G. Kiewiet,\* Renske Dekkers, Laurien H. Ulfman, Andre Groeneveld, Paul de Vos and Marijke M. Faas

A soy hydrolysate contains protein aggregates which possess TLR activating properties.

#### Anti-diabetic activity of a polyphenol-rich extract from *Phellinus igniarius* in KK-Ay mice with spontaneous type 2 diabetes mellitus

Sijian Zheng, Shihao Deng, Yun Huang, Mi Huang, Ping Zhao, Xinhua Ma, Yanzhang Wen, Qiang Wang\* and Xinzhou Yang\*

The present study investigated the anti-diabetic activity and potential mechanisms of the polyphenol rich extract from *Phellinus igniarius* (PI-PRE) *in vitro* and *in vivo*.

#### Quercetin induces the selective uptake of HDLcholesterol *via* promoting SR-BI expression and the activation of the PPAR $\gamma$ /LXR $\alpha$ pathway

Kun Ren, Ting Jiang and Guo-Jun Zhao\*

Reverse cholesterol transport (RCT) is the process to deliver cholesterol to the liver for further excretion and involves scavenger receptor class B type I (SR-BI)mediated selective lipid uptake (SLU) from high-density lipoprotein cholesterol (HDL-C).

A HDUCE cell association HDUC

#### 636

### An altered tissue distribution of flaxseed lignans and their metabolites in Abcg2 knockout mice

Dafne García-Mateos, Rocío García-Villalba, Jon A. Otero, José A. Marañón, Juan C. Espín, Ana I. Álvarez and Gracia Merino\*

The ABCG2 transporter affects the tissue distribution of lignans and their microbial-derived enterolignans after a repeated flaxseed administration.



#### 643

#### Comparative study of the effects of phosphatidylcholine rich in DHA and EPA on Alzheimer's disease and the possible mechanisms in CHO-APP/PS1 cells and SAMP8 mice

Hongxia Che, Miaomiao Zhou, Tiantian Zhang, Lingyu Zhang, Lin Ding, Teruyoshi Yanagita, Jie Xu, Changhu Xue\* and Yuming Wang\*

The beneficial effects of DHA-PC and EPA-PC on AD and the possible underlying molecular mechanisms.



#### CORRECTION

#### 655

### Correction: Dietary fucoidan modulates the gut microbiota in mice by increasing the abundance of *Lactobacillus* and *Ruminococcaceae*

Qingsen Shang, Xindi Shan, Chao Cai, Jiejie Hao, Guoyun Li and Guangli Yu\*