



# 食品工业科技

Science and Technology of Food Industry

S H I P I N    G O N G Y E    K E J I



ISSN 1002—0306  
CN 11-1759/TS

2023 6

第44卷 Vol. 44

广告



## 藤椒精油 就选雪麦龙

致力于天然美味探寻与发现  
提升美食生活体验

专业品质 值得信赖

- 高标准的原料基地
- 精益的超临界CO<sub>2</sub>提取工艺
- 专业美味的产品应用方案
- 爆棚至1500的香气指标
- 塑化剂、重金属、溶剂残留安全指标的严格控制

ISSN 1002-0306



0 6

9 771002 030234



郑州雪麦龙食品香料有限公司  
ZHENGZHOU XUEMAILON FOOD FLAVOR CO.,LTD

### 生产园区

新郑薛店食品工业园区枣园路001号

www.xuemailon.com

电话：0371-62582555

传真：0371-62582333

X  
M  
雪麦龙  
XUE MAILON

# 食品工业科技

SHIPIN GONGYE KEJI

2023年3月 第44卷 第6期

## 目次

### 青年编委专栏

- 添加玉米醇溶蛋白对荞麦面团特性的影响 ..... 李居阳, 王杰儒, 张莹莹, 胡亚云, 栾广忠\*(1)  
发酵米荞对高脂肪秀丽隐杆线虫的降脂及抗氧化作用 ..... 严 静, 薛秋艳, 王 焘, 陈汶意, 谢诗晴, 江津津, 黎 攀, 杜 冰\*(8)  
高粱复配米脂肪体外消化产物及其氧化稳定性 ..... 刘 念, 姜 鹏, 戴凌燕, 阮长青, 张东杰\*, 王长远, 李志江\*(16)

### 未来食品

- 互联网+区块链技术在食品安全溯源体系中的应用及研究进展 ..... 赵巧润, 曹宇璇, 曹怡凡, 徐 笑\*, 程抒劼, 陈贵堂, 曹崇江, 袁 彪\*(24)  
虾副产物自溶过程研究与潜在抗冻肽鉴定 ..... 尹雪莲, 白 雪, 朱 凯, 戴志远\*(33)  
添加剂在食品3D打印中的应用现状 ..... 周莎莎, 杨晓溪, 李翠平, 王明茹, 刘 倩, 王晓腾, 郎玉苗\*(41)

### 研究与探讨

- 不同干燥工艺下紫薯全粉品质分析 ..... 熊 添, 蔡 芳, 何建军, 施建斌, 蔡 沙, 隋 勇, 陈学玲, 范传会, 周德顺, 梅 新\*(49)  
不同干燥方式对五指毛桃品质的影响 ..... 桂 青, 王秀全\*, 黄坚雄, 潘 剑, 郑定华, 袁淑娜(58)  
苹果渣粗多糖对发酵乳品质及抗氧化活性的影响 ..... 王正荣, 吴 鹏, 田小磊, 郭双海\*, 韩丽春(66)  
热诱导Desi鹰嘴豆细胞中淀粉结构及体外消化性的变化 ..... 姚月月, 邓媛元, 魏振承, 张 雁, 唐小俊, 刘 光, 周鹏飞, 赵志浩, 刘 莹\*, 李 萍\*(74)  
亚糊化热处理对玉米淀粉-胡椒碱复合物功能特性的影响 ..... 赵康云, 朴春红\*, 张思维, 王金梦, 覃亚娟, 徐 飞, 陈小爱, 张彦军\*(82)  
不同前处理方式对冻干蓝莓粉品质特性的影响 ..... 许文静, 陈昌琳, 邓 莎, 何贵萍, 李 硕, 吕远平\*(89)  
黑木耳多糖对全麦鲜湿面条的品质改善作用 ..... 裴 菲\*, 李 文, 杜逸飞, 孙 磊, 孙昕炀, 方 勇, 胡秋辉(96)  
湿法糖基化改性对蛋清蛋白凝胶特性及微观结构的影响 ..... 张根生, 徐旖梦, 刘欣慈, 孙立瑞, 赵金娜(105)  
花椒水提物对鳜鱼鱼糜凝胶特性的影响 ..... 韦海秋, 杨明柳, 周迎芹, 方旭波, 陈小娥\*, 谢宁宁\*(113)  
微晶纤维素含量对板栗浆悬浊液稳定性的影响 ..... 周小悦, 姚丽娜, 陶文初, 贲东旭, 赵芳芳, 薛玉清, 李言郡, 舒志成\*(121)  
芥子酸和米糠谷蛋白非共价相互作用的分子机制研究 ..... 梁富强, 段姗姗, 濮欣然, 郭锐林, 石嘉怿\*(128)

### 生物工程

- 基于近红外光谱的橙汁中酸土脂环酸芽孢杆菌的生长预测 ..... 张嘉雯, 刘佳元, 封雨桐, 孙佳怡, 周彬静, 屠 康, 潘磊庆\*(137)

# 食品工业科技

SHIPIN GONGYE KEJI

2023年3月 第44卷 第6期

## 目次

辣椒素和辣椒水提物的抗氧化特性及对人粪便微生物体外培养特性的影响

张 婷, 王玮媛, 彭 澳, 侯爱香\*, 李宗军\*(146)

凝结芽孢杆菌混合碳源乳酸发酵研究 陈铭浩, 刘志豪, 王永红\*(155)

基于工艺优选的冠突曲霉发酵桑寄生茶防治非酒精性脂肪肝病的潜在机制研究

巫文鑫, 覃展敏, 刘佳莉, 陈柳燕, 夏玉萍, 黄 好, 刘小勇, 李永华\*(162)

发酵香肠乳酸菌筛选及其对产品品质的影响 赵银峰, 黄 倩, 周春燕, 宁家文, 王 蜀, 聂 庆, 吉莉莉\*(173)

混菌发酵对沃柑果酒品质改善作用 陈晓蝶, 胡陆军\*, 曹雨澜, 李 丽, 赵志峰(183)

藜麦酸浆中淀粉絮凝菌的分离鉴定及在藜麦蛋白提取中的应用 石学梅, 李婉萌, 林 剑\*(193)

## 工艺技术

金鲳鱼肌原纤维蛋白乳液凝胶的制备及表征 裴志胜, 冯紫蓝, 王会博, 薛长风\*(201)

天然低共熔溶剂提取米糠酶工艺优化及其纯化与酶学性质研究

李淑婷, 邓媛元, 魏振承, 张 雁, 唐小俊, 刘 光, 李 萍, 赵志浩, 周鹏飞\*, 张名位\*(209)

黄米抗性淀粉的压热法制备及其添加量对饼干质构和GI值的影响 张素敏, 崔 艳, 王晓闻\*(219)

鱼腥草根总黄酮超声辅助酶法提取工艺优化及其抗氧化活性研究 蒋雨心, 邓 岚, 范方宇\*(226)

地参发酵酒的工艺优化及品质分析 王 丹, 江春阳, 邓乔晟, 杨 勤\*, 周 浓\*(235)

载姜黄素纳米乳液的制备及体外模拟消化特性研究 万 欣, 陆佳燕, 高 蕊, 杨慧瑾, 李伟伟\*(244)

豇豆热风干燥特性及工艺优化 李巧菲, 张宏图, 彭桂兰\*, 张 欣, 罗 森(253)

山药皮残渣中可溶性膳食纤维的提取工艺优化及结构表征 杭书扬, 杨林霄, 郭建行, 钱格格, 刘延奇\*(261)

超声波辅助水酶法提取黑加仑籽油及其品质分析 王宇晗, 郭天赋, 边 翼, 张 迪\*(267)

超甜玉米对高蛋白纳豆加工工艺及风味的影响 陈乐乐, 吴隽恺, 王乙伊, 殷琳虹(275)

## 分析检测

不同品种莲藕加工藕圆子适应性评价 黄楚雄, 李 洁, 刘纪红, 严守雷\*, 王 茜(283)

超高效液相色谱-串联质谱法测定肉制品中的虾过敏原

刘彤彤, 梁瑞强+, 韩伟娜, 罗娇依, 曹 进, 孙姗姗\*, 陈 启\*(292)

胶体金免疫层析法同时检测果蔬中四种农药残留 叶 茂, 沈晓玲\*, 陈青舟, 夏武强, 张 敏, 张少恩(300)

佛手外皮和果肉的HPLC指纹图谱及多成分定量对比分析 罗华玲, 林海霞, 朱敏凤\*, 杨丽娟, 王 霞(309)

基于区块链的小麦期货交易质量评价体系构建研究 夏 雨, 徐 闵, 魏明侠\*, 陈怀安(317)

基于电子鼻和HS-SPME-GC-MS技术分析9种新疆石榴果实挥发性成分

盛秀丽, 马刘峰, 方志刚, 吴江超, 姜 蕾, 陈 荟\*(325)

# 食品工业科技

SHIPIN GONGYE KEJI

2023年3月 第44卷 第6期

## 目次

### 传统滇红工夫红茶与野生滇红工夫红茶的品质分析

徐亚文, 牛森, 刘娜, 韩利艳, 黄燕兰, 王雪蕾, 杨翔, 李家华\*(335)

基于高光谱成像的贵长猕猴桃硬度快速预测 尚静, 冯树南, 谭涛, 吴美芝, 陈海江, 孟庆龙\*(345)

### 贮运保鲜

超高压处理对牦牛肉贮藏性能的影响 陈腊梅, 唐善虎\*, 李思宁, 赵佳莹, 李巧艳(351)

硫代乙酸糠酯对鲜切茄子褐变的抑制作用 冯岩岩, 梁晓颖, 公立群, 孙妍, 杨睿智, 王庆国\*(361)

### 营养与保健

川赤芝多糖对运动疲劳状态下小鼠心肌组织的保护作用 李英基, 裴水廷\*, 熊鹏(366)

骆驼乳对非酒精性脂肪肝小鼠糖脂代谢的影响 郝世奇, 李雅菲, 吴晓云, 那琴, 明亮, 张秀荣, 吉日木图\*(376)

驼乳铁蛋白DPP-IV抑制肽的筛选验证及其防治糖尿病潜在作用机制探究

谢玉霞, 葛武鹏\*, 李国薇, 白航, 张静, 李香云, 高秦艺, 王爽爽(384)

沙棘花青素提取物对双氧水诱导的H1299细胞损伤的保护作用及Nrf2/HO-1通路的影响

郑玉荣, 陈龙, 王晓, 李军\*, 李宝国\*(396)

### 专题综述

大豆蛋白凝胶制备及其影响因素的研究进展 朱秀清, 邓筱琪, 朱颖\*, 王喜泉, 李玉玲, 夏晓雨(405)

纸基微流控新型传感材料及其在食品分析中应用的研究进展 关桦楠, 杜世琴, 宋岩(415)

无花果营养成分及生物活性研究进展 刘鹏莉, 陈英乡, 遇艳萍, 于学娟, 李钢, 邹晓宇(424)

外源 $\gamma$ -氨基丁酸通过调节肠道菌群改善神经系统疾病研究进展

何维, 宋贺, 扬子彪, 赵世伟, 徐秋怡, 姜燕\*(432)

魔芋葡甘露聚糖对淀粉性能的影响及其在功能性食品中的应用进展

韩倩, 周童欣, 李英溥, 李国栋, 宋兆萍, 刘小娜, 王慧丽\*(441)

基于液相色谱和液质联用法的动物源性食品中氟喹诺酮类与酰胺醇类药物残留检测研究进展

管凡荀, 高鹏飞, 汤亚云, 刘书余, 朱雅丽, 谢恺舟\*(448)

纤维素催化转化为葡萄糖及多元醇的研究进展

孙姚瑶, 杨晓瑞, 金爽, 黎晓彤, 朱婷, 陈林艳, 曾佳怡, 朱建良\*(459)

DHA藻油的生理功能及在食品中复配协同应用的研究进展 黄淑婷, 李宏新, 于越, 袁彪, 曹崇江, 程抒劼\*(468)

酪蛋白糖基化改性的研究进展 曾冰蕙, 郝梦真, 刘桂蓉, 熊文文, 车会莲\*(477)

豌豆蛋白的改性及其在食品中应用的研究进展 周航, 肖彤, 解铁民\*(485)

**SCIENCE AND TECHNOLOGY OF FOOD INDUSTRY**  
**SHIPIN GONGYE KEJI**  
**Mar. 2023 Vol.44 NO.6**

**CONTENTS**

**Papers Invited by Youth Editorial Committee**

- Effect of Zein on Buckwheat Dough Properties ..... *LI Juyang, WANG Jieru, ZHANG Yingying, HU Yayun, LUAN Guangzhong\**(1)  
Hypolipidemic and Antioxidant Effects of Fermented Rice Buckwheat on High-fat *Caenorhabditis elegans* ..... *YAN Jing, XUE Qiuyan, WANG Yang, CHEN Wenyi, XIE Shiqing, JIANG Jinjin, LI Pan, DU Bing\**(8)  
*In Vitro* Digestion Products of Fats in Sorghum/Rice Mixture and Their Oxidative Stability ..... *LIU Nian, JIANG Peng, DAI Lingyan, RUAN Changqing, ZHANG Dongjie\*, WANG Changyuan, LI Zhijiang\**(16)

**Future Food**

- Application and Research Progress of Internet+Blockchain Technology in Food Safety Traceability System ..... *ZHAO Qiaorun, CAO Yuxuan, CAO Yifan, XU Xiao\*, CHENG Shujie, CHEN Guitang, CAO Chongjiang, YUAN Biao\**(24)  
Autolysis Process of Shrimp By-products and Identification of Potential Antifreeze Peptides ..... *YIN Xuelian, BAI Xue, ZHU Kai, DAI Zhiyuan\**(33)  
Status of Food Additives in 3D Food Printing ..... *ZHOU Shasha, YANG Xiaoxi, LI Cuiping, WANG Mingru, LIU Qian, WANG Xiaoteng, LANG Yumiao\**(41)

**Research and Investigation**

- Quality Analysis of Purple Sweet Potato Flour under Different Drying Processes ..... *XIONG Tian, CAI Fang, HE Jianjun, SHI Jianbin, CAI Sha, SUI Yong, CHEN Xueling, FAN Chuanhui, ZHOU Deshun, MEI Xin\**(49)  
Effect of Different Drying Processes on the Quality of *Ficus hirta* Vahl. ..... *GUI Qing, WANG Xiuquan\*, HUANG Jianxiong, PAN Jian, ZHENG Dinghua, YUAN Shuna*(58)  
Effect of Apple Pomace Crude Polysaccharide on the Quality and Antioxidant Activity of Fermented Milk ..... *WANG Zhengrong, WU Peng, TIAN Xiaolei, GUO Shuanghai\*, HAN Lichun*(66)  
Changes of Structure and *In Vitro* Digestion Properties of Starches in Desi Chickpea Cells Induced by Thermal Treatment ..... *YAO Yueyue, DENG Yuanyuan, WEI Zhencheng, ZHANG Yan, TANG Xiaojun, LIU Guang, ZHOU Pengfei, ZHAO Zhihao, LIU Ying\*, LI Ping\**(74)  
Effects of Sub-gelatinization Heat Treatment on Functional Properties of Corn Starch-Piperine Complex ..... *ZHAO Kangyun, PLAO Chunhong\*, ZHANG Siwei, WANG Jinmeng, QIN Yajuan, XU Fei, CHEN Xiaoai, ZHANG Yanjun\**(82)  
Effects of Different Pretreatment Methods on Quality Characteristics of Freeze-dried Blueberry Powder ..... *XU Wenjing, CHEN Changlin, DENG Sha, HE Guiping, LI Shuo, LÜ Yuanping\**(89)  
Effect of *Auricularia auricula* Polysaccharide on the Quality Improvement of Fresh Wet Whole Wheat Noodles ..... *PEI Fei\*, LI Wen, DU Yifei, SUN Lei, SUN Xinyang, FANG Yong, HU Qiuwei*(96)  
Effects of Protein Glycosylation by Hydrothermal Processing on the Gelling Properties and Gel Microstructures of Egg White Proteins ..... *ZHANG Gensheng, XU Yimeng, LIU Xinci, SUN Lirui, ZHAO Jinna*(105)  
Effects of Aqueous Extract of *Zanthoxylum bungeanum* on Gel Properties of Mandarin Fish (*Siniperca chuatsi*) Surimi Gel ..... *WEI Haiqiu, YANG Mingliu, ZHOU Yingqin, FANG Xubo, CHEN Xiaoe\*, XIE Ningning\**(113)  
Effects of Microcrystalline Cellulose Concentration in Complex Colloidal System on Stability of Chestnut Suspension ..... *ZHOU Xiaoyue, YAO Lina, TAO Wenchu, BEN Dongxu, ZHAO Fangfang, XUE Yuqing, LI Yanjun, SHU Zhicheng\**(121)  
Molecular Mechanism Underlying the Non-covalent Interaction between Sinapic Acid and Rice Bran Glutelin ..... *LIANG Fuqiang, DUAN Shanshan, PU Xinran, GUO Ruilin, SHI Jiayi\**(128)

**Bioengineering**

- Growth Prediction of *Alicyclobacillus acidoterrestris* in Orange Juice Based on Near-infrared Spectroscopy ..... *ZHANG Jiawen, LIU Jiayuan, FENG Yutong, SUN Jiayi, ZHOU Binjing, TU Kang, PAN Leiqing\**(137)

**SCIENCE AND TECHNOLOGY OF FOOD INDUSTRY**  
**SHIPIN GONGYE KEJI**  
**Mar. 2023 Vol.44 NO.6**

**CONTENTS**

Antioxidant Properties of Capsaicin and Capsicum Aqueous Extracts and Their Effects on Human Fecal Microbe Culture <i>in Vitro</i>	ZHANG Ting, WANG Weiyuan, PENG Ao, HOU Aixiang*, LI Zongjun*(146)
Lactic Acid Fermentation by <i>Bacillus coagulans</i> with Mixed Carbon Sources	CHEN Minghao, LIU Zhihao, WANG Yonghong*(155)
Potential Mechanism for the Prevention and Treatment Effect of Non-alcoholic Fatty Liver Disease: <i>Aspergillus cristatus</i> Fermented <i>Taxilli Herba</i> Tea Based on Process Optimization	WU Wenxin, QIN Zhanmin, LIU Jiali, CHEN Liuyan, XIA Yuping, HUANG Yu, LIU Xiaoyong, LI Yonghua*(162)
Impact of Lactic Acid Bacteria Screening on the Quality of Fermented Sausage	ZHAO Yinfeng, HUANG Qian, ZHOU Chunyan, NING Jiawen, WANG Shu, NIE Qing, JI Lili*(173)
Research on Improving the Quality of Orah Fruit Wine Based on the Mixed Microbial Fermentation	CHEN Xiaodie, HU Lujun*, CAO Yulan, LI Li, ZHAO Zhifeng(183)
Isolation and Identification of Starch Flocculants in Quinoa Acid Pulp and Its Application in Quinoa Protein Extraction	SHI Xuemei, LI Wanmeng, LIN Jian*(193)

**Processing Technology**

Preparation and Characterization of <i>Trachinotus ovatus</i> Myofibrillar Protein Emulsion Gel	PEI Zhisheng, FENG Zilan, WANG Huibo, XUE Changfeng*(201)
Natural Deep Eutectic Solvents Extraction and Purification of Rice Bran Esterase and Its Characteristics	LI Shuting, DENG Yuanyuan, WEI Zhencheng, ZHANG Yan, TANG Xiaojun, LIU Guang, LI Ping, ZHAO Zhihao, ZHOU Pengfei*, ZHANG Mingwei*(209)
Preparation of Glutinous Millet Resistant Starch by Thermal-press Processing Method and the Effect of Its Addition Amount on the Texture and GI of Biscuits	ZHANG Sumin, CUI Yan, WANG Xiaowen*(219)
Ultrasonic Assisted Extraction Process of Flavonoids from <i>Houttuynia cordata</i> Thunb and Its Antioxidant Activity	JIANG Yuxin, DENG Lan, FAN Fangyu*(226)
Process Optimization and Quality Analysis of <i>Lycopus lucidus</i> Fermented Wine	WANG Dan, JIANG Chunyang, DENG Qiaosheng, YANG Qin*, ZHOU Nong*(235)
Preparation of Curcumin Nanoemulsion and Its <i>in Vitro</i> Simulated Digestion Characteristics	WAN Xin, LU Jiayan, GAO Rui, YANG Huijin, LI Weiwei*(244)
Hot Air Drying Characteristics and Process Optimization of Cowpea	LI Qiaofei, ZHANG Hongtu, PENG Guilan*, ZHANG Xin, LUO Sen(253)
Optimization and Characterization of Extraction Technology of Soluble Dietary Fiber from Yam Peel Residue	HANG Shuyang, YANG Linxiao, GUO Jianhang, QIAN Gege, LIU Yanqi*(261)
Extraction of Blackcurrant Seed Oil by Ultrasound-Assisted Aqueous Enzymatic Method and Its Quality Analysis	WANG Yuhan, GUO Tianfu, BIAN Hao, ZHANG Di*(267)
Effect of Super Sweet Corn on the Processing and Flavour of High Protein Natto	CHEN Lele, WU Junkai, WANG Yiyi, YIN Linhong(275)

**Analysis and Determination**

Suitability Evaluation of Different Varieties of Lotus Rhizome for Lotus Rhizome Balls	HUANG Chuxiong, LI Jie, LIU Jihong, YAN Shoulei*, WANG Xi(283)
Determination of Shrimp Allergens in Meat Products by Ultra Performance Liquid Chromatography-Tandem Mass Spectrometry	LIU Tongtong, LIANG Ruiqiang*, HAN Weina, LUO Jiaoyi, CAO Jin, SUN Shanshan*, CHEN Qi*(292)
Simultaneous Determination of Four Pesticide Residues in Fruits and Vegetables by Colloidal Gold Immunoassay	YE Mao, SHEN Xiaoling*, CHEN Qingzhou, XIA Wuqiang, ZHANG Min, ZHANG Shaoen(300)
Comparative Analysis Between Scarfskin and Scarcocarp of <i>Citrus medica</i> L. var. <i>sarcodactylis</i> Swingle by HPLC Fingerprints and Multi-components Content Determination	LUO Hualing, LIN Haixia, ZHU Minfeng*, YANG Lijuan, WANG Xia(309)
Research on Construction of Quality Evaluation System for Wheat Futures Trading Based on Blockchain	XIA Yu, XU Ta, WEI Mingxia*, CHEN Huaian(317)

**SCIENCE AND TECHNOLOGY OF FOOD INDUSTRY**  
**SHIPIN GONGYE KEJI**  
**Mar. 2023 Vol.44 NO.6**

**CONTENTS**

Analysis of Volatile Components of Nine <i>Punica granatum</i> L. Cultivars Grown in Xinjiang Based on Electronic Nose and HS-SPME-GC-MS	..... SHENG Xiuli, MA Liufeng, FANG Zhigang, WU Jiangchao, JIANG Lei, CHEN Yun*(325)
Quality Analysis of Traditional and Wild Yunnan Congou Black Tea	..... XU Yawen, NIU Miao, LIU Na, HAN Liyan, HUANG Yanlan, WANG Xuelei, YANG Xiang, LI Jiahua*(335)
Rapid Prediction for the Firmness of Guichang Kiwifruit by Hyperspectral Imaging	..... SHANG Jing, FENG Shunan, TAN Tao, WU Meizhi, CHEN Haijiang, MENG Qinglong*(345)

**Storage and Preservation**

Effects of High-pressure Processing on the Storage Properties of Yak Meat	..... CHEN Lamei, TANG Shanhu*, LI Sining, ZHAO Jiaying, LI Qiaoyan(351)
Inhibitory Effect of Furfuryl Thioacetate on Browning in Fresh-cut Eggplant	..... FENG Yanyan, LIANG Xiaoying, GONG Liqun, SUN Yan, YANG Ruizhi, WANG Qingguo*(361)

**Nutrition and Healthcare**

Protective Effect of <i>Ganoderma lucidum</i> Polysaccharide on Myocardial Tissue in Mice under Exercise Fatigue	..... LI Yingji, PEI Shuiting*, XIONG Peng(366)
Effects of Camel Milk on Glucolipid Metabolism in Mice with Nonalcoholic Fatty Liver Disease	..... HAO Shiqi, LI Yafei, WU Xiaoyun, NA Qin, MING Liang, ZHANG Xiurong, JI Rimutu*(376)
In Silico Analysis of Novel DPP-IV Inhibitory Peptides Released from Camel Milk Lactoferrin and the Possible Pathways Involved in Diabetes Protection	..... XIE Yuxia, GE Wupeng*, LI Guowei, BAI Hang, ZHANG Jing, LI Xiangyun, GAO Qinyi, WANG Shuangshuang(384)
Protective Effect of the Anthocyanidin Extract of <i>Hippophae rhamnoides</i> L. on H1299 Cell Injury Induced by Hydrogen Peroxide and Effect of Nrf2/HO-1 Pathway	..... ZHENG Yurong, CHEN Long, WANG Xiao, LI Jun*, LI Baoguo*(396)

**Reviews**

Advances in the Gel Preparation and Its Affecting Factors of Soybean Protein	..... ZHU Xiuqing, DENG Xiaoqi, ZHU Ying*, WANG Xiquan, LI Yuling, XIA Xiaoyu(405)
Application of New Paper-based Microfluidic Sensing Materials in Food Analysis	..... GUAN Huanan, DU Shiqin, SONG Yan(415)
A Review of Nutritional Components and Biological Activity of <i>Ficus carica</i>	..... LIU Pengli, CHEN Yingxiang, YU Yanping, YU Xuejuan, LI Gang, ZOU Xiaoyu(424)
Research Progress of Exogenous $\gamma$ -Aminobutyric Acid in Improving Neurological Diseases by Regulating Intestinal Flora	..... HE Wei, SONG He, YANG Zibiao, ZHAO Shiwei, XU Qiuyi, JIANG Yan*(432)
Effects on Starch Properties and Application in Functional Foods of Konjac Glucomannan	..... HAN Qian, ZHOU Tongxin, LI Yingpu, LI Guodong, SONG Zhaoping, LIU Xiaona, WANG Huili*(441)
Research Progress on Residue Detection of Methods of Fluoroquinolones and Amphenicols in Animal-derived Foods Based on Liquid Chromatographic and Liquid Chromatographic Mass Spectrometry	..... GUAN Fanxun, GAO Pengfei, TANG Yayun, LIU Shuyu, ZHU Yali, XIE Kaizhou*(448)
Research Progress on Catalytic Conversion of Cellulose to Glucose and Polyols	..... SUN Yaoyao, YANG Xiaorui, JIN Shuang, LI Xiaotong, ZHU Ting, CHEN Linyan, ZENG Jiayi, ZHU Jianliang*(459)
Research Progress on Physiological Functions of DHA Algal Oil and Its Synergistic Application in Food	..... HUANG Shuting, LI Hongxin, YU Yue, YUAN Biao, CAO Chongjiang, CHENG Shujie*(468)
Research Progress of Casein Glycosylation and Changes in Functional Properties	..... ZENG Binghui, HAO Mengzhen, LIU Guirong, XIONG Wenwen, CHE Huilian*(477)
Research Progress on Modification and Application of Pea Protein in Food Field	..... ZHOU Hang, XIAO Tong, XIE Tiemin*(485)