

202115

食品科学

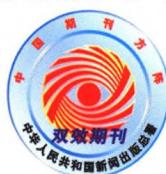
FOOD SCIENCE

2021年第42卷第15期

半月刊

2021年8月15日出版

ISSN1002-6630
CN11-2206/TS



中国出版政府奖期刊提名奖

创新科技 香氛四溢



Q K 2 1 3 3 0 9 6

广告



专注于调味精油行业

十年积淀

专业品质，值得信赖

- 11700升+ X 超临界萃取生产规模
- 108项专有技术，细分行业技术开发的领跑者
- 1800家客户，优质服务的体验者



ISSN 1002-6630

全国客服热线

400-032-5166

15>

www.xomolon.com



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

公司总部及研发中心

电话: 0371-56561888

传真: 0371-56567092

郑州市航空港区新港大道

台湾科技园C7-2栋

生产园区

电话: 0371-62582555

传真: 0371-62582333

新郑薛店食品工业

园区梨园路001号

XM
雪麦龙
XUEMAILON



目次

食

品

2021年 第42卷

专家约稿

生物培育肉发展现状及战略思考.....王守伟, 孙宝国, 李石磊, 李雨爽, 孙金沅, 李莹莹*(1)

基础研究

玉米纤维胶-乳清分离蛋白Maillard共聚物对姜黄素乳液稳定性和

消化特性的影响.....朱巧梅, 于晓雯, 陈海涛, 殷丽君*(10)

基于罗非鱼肌肉微结构分形维数表征的冻融过程品质变化分析.....付仁豪, 汪春玲, 陈政, 林向东, 冯爱国*(19)

酸胁迫对鼠伤寒沙门氏菌抗酸性、细胞膜及膜蛋白的影响.....李琳琼, 洪静, 张丽君, 高瑀珑*(27)

黑加仑果实降解多糖理化特性、结构及体外降血糖活性.....徐雅琴, 杨海红, 李大龙, 陈哲, 王丽波, 杨昱*(37)

红毛丹果皮中老鹳草素的分离纯化及其热稳定性.....李钰景, 孙丽平, 庄永亮*(44)

天然抗氧化剂对红烧肉烹饪过程中热加工危害物形成的控制.....刘李春, 蒋玉洁, 申明月, 谢明勇, 聂少平*(50)

蒸煮方式对鳕鱼头汤呈味特性的影响.....王媛媛, 李学鹏*, 王金厢, 励建荣, 李婷婷, 郭晓华(58)

人参浸提液处理对烧鸡食用品质的影响.....周亚军, 王雪松, 陈艳, 王淑杰*(66)

食品工程

低温等离子体处理对糙米原料及

糙米饭风味特性的影响.....张培茵, 孟宁, 刘明, 刘艳香, 翁学梅, 谭斌*, 孙莹*, 翟小童(74)

基于变异系数法对气流膨化处理

马铃薯方便粥品质的评价.....白洁, 蒋华彬, 张小飞, 李玉美, 李经伟, 袁诺, 张赛, 彭义交*(81)

挤压处理对玉米粉流变及其成膜特性的影响.....樊红秀, 李艳霞, 刘婷婷, 刘鸿铖, 王大为, 张艳荣*(89)

超微粉碎对苦荞面条品质特性的影响.....程佳钰, 高利, 汤晓智*(99)

热加工方式对香菇营养特性和抗氧化活性的影响.....周浩宇, 俞明君, 聂远洋, 张鹏辉, 杨伟, 李波*(106)

Pd/碳纳米管催化转移氢化大豆油工艺

优化及动力学分析.....杜晶, 张晨晨, 王莹, 高佳佳, 朱秀清*, 于殿宇*, 王立琦, 罗淑年, 史永革(115)

营养卫生

食品级 κ -卡拉胶对肥胖小鼠致结肠炎风险及

体脂蓄积的影响.....张慧, 杨瑞利, 刘芳, 周赛楠, 卢娜, 唐庆娟*(121)

苦荞中可溶性及不可溶性膳食纤维调控糖尿病小鼠糖脂代谢的功效.....仇菊, 朱宏, 吴伟菁*(129)

姜黄素调节Na/K-ATPase/Src信号通路保护LLC-PK1细胞

缺氧复氧损伤.....翟兵中, 张丽婧, 刘臻, 陈建国, 胡志航, 梅松, 胡文力, 楼敏涵, 王茵, 曲雪峰*(136)

羧甲基普鲁兰多糖螯合钙的制备及其功效评价.....李海鹰, 杨祥禾, 魏珍珍, 贾蓓, 杨文智*(143)

增鲜剂5'-肌苷酸二钠恶化老龄db/db小鼠

脂质代谢紊乱的分子机制.....姜允嘉, 刘金艳, 许赛君, 王洋, 张彬, 成钟, 许扬, 谢勇*(150)

科学

学

目 次



第15期 总第652期

圣草次苷的合成及其对过氧化氢诱导人脐静脉内皮

- 细胞氧化损伤的保护作用 梁曾恩妮, 汪秋安, 张菊华, 苏东林, 付复华, 李高阳, 刘伟*, 单杨*(159)
乳酸菌发酵胡柚汁对小鼠肥胖的调节作用 颜旭, 王方杰, 吴祖芳*, 翁佩芳(167)
米糠粕不溶性膳食纤维理化性质及对高脂大鼠肠道菌群的影响 刘倩, 范誉川, 刘素诗, 赵洁羽, 魏涛*(174)

包装贮运

- 链格孢霉菌侵染番茄产毒机制 曲劲尧, 林煜程, 毛馨, 卢国柱, 袁智鹏, 张瑶瑶, 尤艳莉, 李彦伸*(180)
褪黑素处理对草莓品质与活性氧代谢的影响 黄鸿晖, 顾里娟, 李美琳, 郑永华, 金鹏*(187)
‘金冠’和‘富士’苹果采后活性氧
相关代谢差异比较 吕静祎, 丁思杨, 张俊虎, 徐冬乐, 孙明宇, 张潔支, 葛永红, 励建荣*(194)
臭氧结合气调包装对毛竹笋的保鲜作用 陈磊, 黄杰, 杨瑞, 周忠雨, 毕秀芳*, 刘晓翠(200)
壳聚糖处理对西番莲果实感病指数、抗病相关酶活性和
抗病物质含量的影响 郭欣, 林育钊, 林河通*, 李倩, 段睿琦, 朱文婧(206)
茉莉酸甲酯处理对青圆椒采后冷害
生理与营养品质的影响 付安珍, 左进华, 王清, 高丽朴, 马丽丽, 白春美, 闫志成, 牟建楼*(213)

专题论述

- 营养调控对免疫细胞代谢重编程的研究进展 潘晓花, 潘礼龙, 孙嘉*(220)
基于静电流体的静电纺丝/喷涂技术在食品领域中的研究进展 冯坤, 韦昀姗, 吴虹*(231)
酒类风味物质对人体乙醇代谢影响的研究进展 蒋洋, 张翠英*, 李于, 肖冬光(242)
海洋无脊椎动物大防御素的研究进展 许艳红, 闵军, 周洪磊, 张怡, 刘卫, 胡晓珂*(251)
水产品贮运过程中货架期预测的研究进展 王红丽, 王锡昌*, 施文正, 周纷, 王玥科(261)
水产品生物胺检测技术研究进展 刘亚楠, 李欢, 陈剑, 苏来金, 傅玲琳, 王彦波*(269)
白酒地域特征鉴别技术研究进展 鲁祥凯, 杨彪*, 樊保民, 孙辉, 张慧娟, 孙啸涛(278)
玉米醇溶蛋白基纳米颗粒的制备及应用研究进展 葛思彤, 贾睿, 刘回民*, 郑明珠, 蔡丹, 刘景圣*(285)
冷冻水产品冷链流通过程中品质变化及调控技术研究进展 韩昕苑, 樊震宇, 从娇娇, 姜晴晴, 王锡昌*(293)
多糖的增稠、胶凝及乳化特性研究进展 李秀秀, 尚静, 杨曦, 薛佳*, 郭玉蓉(300)
酵母菌的益生功能及在食品中的应用 牟志勇, 杨昳津, 王光强, 熊智强, 宋馨, 李国辉, 艾连中, 夏永军*(309)
食品中常见过敏原及检测
技术研究进展 宁亚维, 杨正, 马梦戈, 刘苗, 陈艺, 赵忠情, 李强*, 张岩*(319)
酶法修饰对大豆分离蛋白凝胶性质影响的研究进展 王佳蓉, 丁阳月, 姜云庆, 董和亮, 王秋野, 程建军*(329)
茶叶香气物质响应胁迫机制与功能研究进展 闫振, 王登良*(337)
生物活性硒肽的研究进展 贾蕾, 向极钎, 殷红清, 何慧, 侯焘*(346)
脱氧雪腐镰刀菌烯醇及其衍生物检测方法的研究进展 刘慧, 吴颖, 黄华(356)



Contents

FOOD

2021 Vol.42 No.15

Invited Papers

Development Status and Strategic Thinking of Cultivated Meat WANG Shouwei, SUN Baoguo, LI Shilei, LI Yushuang, SUN Jinyuan, LI Yingying* (1)

Basic Research

Effect of Corn Fiber Gum-Whey Protein Isolate Maillard Conjugates on the Stability and

in Vitro Digestibility of Curcumin-Loaded Emulsions ZHU Qiaomei, YU Xiaowen, CHEN Haitao, YIN Lijun* (10)

Quality Change of Tilapia Fillets during Freeze-Thaw Cycles Characterized

Based on Fractal Dimension of Microstructure FU Renhao, WANG Chunling, CHEN Zheng, LIN Xiangdong, FENG Aiguo* (19)

Effect of Acid Stress on Acid Resistance, Cell Membrane and

Membrane Protein of *Salmonella typhimurium* LI Linqiong, HONG Jing, ZHANG Lijun, GAO Yulong* (27)

Physicochemical Properties, Structural Characterization and Hypoglycemic

Activity in Vitro of Degraded Polysaccharides from Blackcurrants XU Yaqin, YANG Haihong, LI Dalong, CHEN Zhe, WANG Libo, YANG Yu* (37)

Purification and Thermal Stability of Geraniin from Rambutan (*Nephelium lappaceum*) Peels LI Yujing, SUN Liping, ZHUANG Yongliang* (44)

Inhibitory Effect of Natural Antioxidants on the Formation of

Thermal Processing Hazards in Red Braised Pork LIU Lichun, JIANG Yujie, SHEN Mingyue, XIE Mingyong, NIE Shaoping* (50)

Effects of Cooking Methods on Flavor Characteristics of

Pacific Cod Head Soup WANG Yuanyuan, LI Xuepeng*, WANG Jinxiang, LI Jianrong, LI Tingting, GUO Xiaohua (58)

Effects of Ginseng Extracts on Eating Quality of Roast Chicken ZHOU Yajun, WANG Xuesong, CHEN Yan, WANG Shujie* (66)

Food Engineering

Effects of Low Temperature Plasma Treatment on Flavor Characteristics of

Raw and Cooked Brown Rice ZHANG Peiyin, MENG Ning, LIU Ming, LIU Yanxiang, ZAN Xuemei, TAN Bin*, SUN Ying*, ZHAI Xiaotong (74)

Quality Evaluation of Instant Potato Congee Treated by Air Puffing

Based on Variation Coefficients BAI Jie, JIANG Huabin, ZHANG Xiaofei, LI Yumei, LI Jingwei, YUAN Nuo, ZHANG Sai, PENG Yijiao* (81)

Effect of Extrusion Treatment on the Rheological and

Film Formation Properties of Corn Flour FAN Hongxiu, LI Yanxia, LIU Tingting, LIU Hongcheng, WANG Dawei, ZHANG Yanrong* (89)

Effect of Ultrafine Grinding on the Quality of Tartary Buckwheat Noodles CHENG Jiayu, GAO Li, TANG Xiaozhi* (99)

Effects of Heat Processing Methods on Nutritional Properties and

Antioxidant Activity of *Lentinus edodes* ZHOU Haoyu, YU Mingjun, NIE Yuanyang, ZHANG Penghui, YANG Wei, LI Bo* (106)

Process Optimization and Kinetic Analysis of Pd/Carbon Nanotubes Catalyzed Transfer Hydrogenation of

Soybean Oil DU Jing, ZHANG Chenchen, WANG Ying, GAO Jiajia, ZHU Xiuqing*, YU Dianyu*, WANG Liqi, LUO Shunian, SHI Yongge (115)

Nutrition and Hygiene

Effect of Food-Grade κ -Carrageenan on Risk of Colitis and

Accumulation of Body Fat in Obese Mice ZHANG Hui, YANG Ruili, LIU Fang, ZHOU Sainan, LU Na, TANG Qingjuan* (121)

Regulatory Effect of Soluble and Insoluble Dietary Fiber from Tartary Buckwheat on

Glucose and Lipid Metabolism in Diabetic Mice QIU Ju, ZHU Hong, WU Weijing* (129)

Curcumin Attenuated Hypoxia/Reoxygenation-Induced Injury in

LLC-PK1 Cells via Na/K-ATPase/Src Signaling Pathway ZHAI Bingzhong, ZHANG Lijing, LIU Zhen, CHEN Jianguo, HU Zhihang, MEI Song, HU Wenli, LOU Minhan, WANG Yin, QU Xuefeng* (136)

Preparation and Evaluation of Carboxymethylyl

Pullulan-Calcium Complex *in Vivo* LI Haiying, YANG Xianghe, WEI Zhenzhen, JIA Bei, YANG Wenzhi* (143)

The Freshener Inosine 5'-Monophosphate Disodium Aggravates Lipid Metabolic

Disorder in Elderly *db/db* Mice JIANG Yunjia, LIU Jinyan, XU Sajun, WANG Yang, ZHANG Bin, CHENG Zhong, XU Yang, XIE Yong* (150)

Synthesis of Eriocitrin and Its Protective Effect on in Hydrogen Peroxide-Induced Oxidative

Damage in Human Umbilical Vein Endothelial Cells LIANG Zeng'enni, WANG Qian, ZHANG Juhua, SU Donglin, FU Fuhua, LI Gaoyang, LIU Wei*, SHAN Yang* (159)



Serial No.652

Lactic Acid Bacteria-Fermented Huyou (*Citrus paradisi* cv. Changshanhuoyou)

Juice Regulates Diet-Induced Obesity in Mice YAN Xu, WANG Fangjie, WU Zufang*, WENG Peifang (167)

Physicochemical Properties of Insoluble Dietary Fiber from Defatted Rice Bran and

Its Effect on Intestinal Microbiota of High-Fat Diet Fed Rats LIU Qian, FAN Yuchuan, LIU Sushi, ZHAO Jieyu, WEI Tao* (174)

Packaging, Storage and Transportation

Occurrence Patterns of *Alternaria* Toxins in Tomatoes Inoculated

with *Alternaria* spp. QU Jingyao, LIN Yucheng, MAO Xin, LU Guozhu, YUAN Zhipeng, ZHANG Yaoyao, YOU Yanli, LI Yanshen* (180)

Effect of Postharvest Melatonin Treatment on Quality and Reactive

Oxygen Species Metabolism in Strawberry HUANG Honghui, GU Lijuan, LI Meilin, ZHENG Yonghua, JIN Peng* (187)

Comparison of Reactive Oxygen Species (ROS) Metabolism between 'Golden Delicious' and

'Fuji' Apple Fruit after Harvest LÜ Jingyi, DING Siyang, ZHANG Junhu, XU Dongle, SUN Mingyu, ZHANG Yingzhi, GE Yonghong, LI Jianrong* (194)

Preservation Effect of Ozone Treatment Combined with Modified

Atmosphere Packaging on Moso Bamboo Shoots CHEN Lei, HUANG Jie, YANG Rui, ZHOU Zhongyu, BI Xiufang*, LIU Xiaocui (200)

Effect of Chitosan Treatment on Disease Index, Disease Resistant-Related Enzyme Activities and Disease Resistance-Related Substance

Contents in *Passiflora caerulea* L. Fruit during Storage GUO Xin, LIN Yuzhao, LIN Hetong*, LI Qian, DUAN Ruiqi, ZHU Wenjing (206)

Effect of Methyl Jasmonate Treatment on Chilling Injury-Related Physiological Factors and Nutritional Quality of

Postharvest Green Bell Peppers FU Anzhen, ZUO Jinhua, WANG Qing, GAO Lipu, MA Lili, BAI Chunmei, YAN Zhicheng, MU Jianlou* (213)

Reviews

Recent Progress on Nutritional Regulation of Metabolic Reprogramming in Immune Cells PAN Xiaohua, PAN Lilong, SUN Jia* (220)

Progress in Applications of Electrospinning/Electrospraying Based on

Electrohydrodynamics in the Food Field FENG Kun, WEI Yunshan, WU Hong* (231)

Effect of Flavor Substances in Alcoholic Beverages on Ethanol

Metabolism in Human Body: A Review JIANG Yang, ZHANG Cuiying*, LI Yu, XIAO Dongguang (242)

Recent Advances in Big Defensins of Marine Invertebrates XU Yanhong, MIN Jun, ZHOU Honglei, ZHANG Yi, LIU Wei, HU Xiaoke* (251)

Recent Progress on Shelf-Life Prediction of Aquatic

Products during Storage and Transportation WANG Hongli, WANG Xichang*, SHI Wenzheng, ZHOU Fen, WANG Yueke (261)

Progress in Detection Techniques for Biogenic Amines in Aquatic Products LIU Yanan, LI Huan, CHEN Jian, SU Laijin, FU Linglin, WANG Yanbo* (269)

Advances in Technologies for Identification of

Geographical Characteristics of Baijiu LU Xiangkai, YANG Biao*, FAN Baomin, SUN Hui, ZHANG Huijuan, SUN Xiaotao (278)

Progress in Preparation and Application of Zein-Based Nanoparticles GE Sitong, JIA Rui, LIU Huimin*, ZHENG Mingzhu, CAI Dan, LIU Jingsheng* (285)

Progress in Quality Changes and Control Technologies of Frozen

Aquatic Products during Cold Chain Circulation HAN Xinyuan, FAN Zhenyu, CONG Jiaojiao, JIANG Qingqing, WANG Xichang* (293)

A Review on Thickening, Gelling and Emulsifying Properties of Polysaccharides LI Xiuxiu, SHANG Jing, YANG Xi, XUE Jia*, GUO Yurong (300)

Beneficial Effects of Yeasts and

Applications in Foods MU Zhiyong, YANG Yijin, WANG Guangqiang, XIONG Zhiqiang, SONG Xin, LI Guohui, AI Lianzhong, XIA Yongjun* (309)

Progress in Common Food Allergens and

Technologies for Their Detection NING Yawei, YANG Zheng, MA Mengge, LIU Zhuo, CHEN Yi, ZHAO Zhongqing, LI Qiang*, ZHANG Yan* (319)

Progress in Understanding the Effect of Enzymatic Modification on

Gel Properties of Soy Protein Isolate WANG Jiarong, DING Yangyue, JIANG Yunqing, DONG Heliang, WANG Qiuye, CHENG Jianjun* (329)

Progress in Understanding the Stress Response Mechanisms and Functions of Aroma Compounds in Tea YAN Zhen, WANG Dengliang* (337)

Progress in Bioactive Selenium-Containing Peptides JIA Lei, XIANG Jiqian, YIN Hongqing, HE Hui, HOU Tao* (346)

Progress in Analytical Methods for the Determination of Deoxynivalenol and Its Derivatives LIU Hui, WU Ying, HUANG Hua (356)

鲜味升级

抗吸潮！

安琪抗吸潮YE

(酵母抽提物)

破解难题，
提供粉体复合调味料
风味提升解决方案
彻底突破吸潮限制！



【视频讲解】
抗吸潮对比详情



免费申样

适合方便面粉包、鸡精、鸡粉、排骨粉、休闲食品外撒料、休闲食品、咸味香精等粉体复合调味料，以及休闲调味小菜、休闲即食类食品等产品预混调味料。



独特工艺
含氮呈味物质丰富
颜色较浅



CLEAN
饱满醇厚，鲜味丰富
无杂味



流动性好
抗吸潮性强
适应绝大多数生产环境