

食品与发酵科技

SHIPIN YU FAJIAO KEJI

中国科技核心期刊
中国期刊综合评价数据库统计源期刊
美国《化学文摘》(CA)收录期刊

荣获中国首届《CAJ-CD》规范执行优秀奖
《中国核心期刊(遴选)数据库》收录
波兰《哥白尼索引》(IC)收录期刊

4
2021

第57卷·总第224期



QK2132618

泸州老窖酒传统酿制技艺
第23代传承人引领之作



高光
轻奢生活

6G品质标准·新轻奢主义白酒

食品与发酵科技

FOOD AND FERMENTATION SCIENCES & TECHNOLOGY

(双月刊)

第57卷 第4期(总第224期)

2021年8月25日出版

编委会主任：孙宝国（院士） 陈 坚（院士）

编委会执行主任：陈 功 刘 念

编委会委员：胡永松 金济良 李大和 罗云波
饶平凡 张和平 李洪军 张 良
赵东 沈毅 王 卫 郭海燕
励建荣 罗惠波 何 强 李 诚
陈祥贵 唐善虎 刘学波 雷红涛
朱克永 游敬刚 王 刚 陈宏毅
潘建军 张其圣 冯 霞 陈 蓉

主 编：陈 功

副 主 编：沈才洪 刘 念（执行）

责任编辑：邓 姣 史 辉

校 对：余文华

英文编辑：张蓓蓓

主管单位：四川省经济和信息化厅

主办单位：四川省食品发酵工业研究设计院有限公司

协办单位：中国轻工业酿酒工程及应用重点实验室
酿酒生物技术及应用四川省重点实验室
泸州老窖股份有限公司

四川省绵阳市丰谷酒业有限责任公司

四川剑南春集团有限责任公司

编辑出版：《食品与发酵科技》编辑部

地 址：中国·四川·成都市温江区杨柳东路中段98号
(四川省食品发酵工业研究设计院有限公司内)

邮 编：611130

电 话：028-82763572

传 真：028-82763572

投稿平台网址：<http://sksf.cbpt.cnki.net>

E-mail：sfaf 8889@163.com, sfaf 789@sina.com

网 址：www.SC-FFM.com

广告许可证号：5100004000309

印 刷：四川煤田地质制图印刷厂

发行范围：国内外公开发行

邮发代号：62-247

发 行：成都市邮政局

国际标准刊号：ISSN1674-506X

国内统一刊号：CN51-1713/TS

定价：22.00元/册

版权声明

本刊已许可中国学术期刊(光盘版)电子杂志社在中国知网及其系列数据库产品中以数字化方式复制、汇编、发行、信息网络传播本刊全文。该社著作权使用费与本刊稿酬一并支付(已换算为杂志赠阅)。作者向本刊提交文章发表的行为即视为同意我刊上述声明。

C 目次 CONTENTS

(1973年创刊)

应用研究

- 响应面法优化提高桑黄 YC-1 菌发酵法生产总三萜产率的研究 杨彩云, 刘晓凤, 王光强, 等 (1)
富硒青钱柳-蛹虫草复方小鼠免疫调节及抗氧化实验研究 罗丹, 陈丹, 白曦晨, 等 (8)
初产蛋溏心皮蛋工艺优化及其腌制过程动态分析 石登慧, 苏伟, 母应春, 等 (14)
氯化钙处理对茭白采后品质的影响 董桂君, 乔勇进, 刘晨霞, 等 (23)
基于成熟值理论的炒制烹后蒜薹及猪肉品质变化研究 赵庭霞, 邓力, 李静鹏, 等 (32)
不同复配比例对早酥梨-猕猴桃复合果酒香气化合物的影响 宋欣芫, 李洁春, 杨学山, 等 (39)
德国试制泡菜滋味物质及微生物群落结构解析 黄润秋, 李嘉仪, 明建英, 等 (51)
低GI藜麦面条挤压工艺及体外消化特性研究 张鑫, 任元元, 孟资宽, 等 (57)
四个不同地区大红袍花椒主体风味物质分析研究及香气评价 郝旭东, 张盛贵, 王倩文, 等 (63)
南极磷虾自溶工艺优化及其自溶产物鲜味评价研究 赵陆恺, 王梦娟, 王昊昭, 等 (75)
柚子籽油微胶囊对中长跑运动员无氧阈及运动成绩的影响 刘金生, 房磊, 赵锦锦 (81)
界面各向异性对速冻保鲜过程中冰晶生长行为的影响 杨燕, 李娜, 袁训锋 (86)
一种郫县豆瓣芥末酱的开发 李龙, 李洁芝, 李恒, 等 (91)
食品加工废气净化工艺的研究 方洲, 郭炎鹏, 李玉柱 (98)

综 述

- 甲壳类水产品变质问题和低温保鲜及其辅助技术的研究进展 王芳, 周国燕 (106)
中药“六神曲”发酵工艺研究进展 庞思奇, 马嘉擎, 林家慧, 等 (113)

分析与检测

- 高效液相色谱法检测发酵液中甜菜碱的含量 李宇宁, 冯波, 郑克义, 等 (117)
超高效液相色谱-串联质谱法测定保健品中的氢氯噻嗪 彭名军, 林子豪, 曾豪威, 等 (122)
气相色谱测定固态酿造基质中四甲基吡嗪的前处理方法优化 彭奎, 沈毅, 郭杰, 等 (127)

项目管理

- 基于链杆平衡原理的酿酒工程技改项目多目标集成管理模型设计研究 曾凤鸣, 敦灵 (131)

专业教学与实践

- 依托测试科学中心的食品专业大型仪器设备共享管理实践与探索 陈艳, 刘静波, 王二雷 (139)
基于OBE模式食品专业学生创新创业能力的培养与评价 杨立娜, 崔士坤, 曹雪慧, 等 (144)
浅谈《食品工程原理》课程思政教育的探索与实践 奚春宇, 张燕, 王笑丹, 等 (147)

期刊基本参数:CN51-1713/TS*1973*q*16*144*zh*22.00*5000*23*2021-08

FOOD AND FERMENTATION SCIENCES & TECHNOLOGY

(Bimonthly)

First Issue August 1973
Volume 57 Number 4(Total Number 224) August 25, 2021

Director of Editorial Board:	SUN Bao-guo	CHEN Jian
Executor Director of Editorial Board:	CHEN Gong	LIU Nian
Member of Editorial Board:	HU Yong-song	JIN Ji-liang
	LI Da-he	LUO Yun-bo
	RAO Ping-fan	ZHANG He-ping
	LI Hong-jun	ZHANG Liang
	ZHAO Dong	SHEN Yi
	WANG Wei	GAO Hai-yan
	LI Jian-rong	LUO Hui-bo
	HE Qiang	LI Cheng
	CHEN Xiang-gui	TANG Shan-hu
	LIU Xue-bo	LEI Hong-tao
	ZHU Ke-yong	YOU Jing-gang
	WANG Gang	CHEN Hong-yi
	PAN Jian-jun	ZHANG Qi-sheng
	FENG Xia	CHEN Rong

Chief Editor: CHEN Gong

Associate Editor: SHEN Cai-hong LIU Nian(Executor)

Responsible Editor: DENG Shan SHI Hui

English Editor: ZHANG Bei-bei

Started in: 1973

Been in Charge of By: Sichuan Provincial Economic and Information Department

Sponsored by: Sichuan Food and Fermentation Industry Research & Design Institute Co., Ltd

Jointly Sponsored by: Key Laboratory of Brewing Engineering and Application of China National Light Industry Council

Liquor-making Biotechnology & Application Key Laboratory of Sichuan Province

Luzhou Laojiao Co., Ltd

Sichuan Mianyang Forgood Distillery Co., Ltd.

Sichuan Jiannanchun Group Co., Ltd.

Edited by: Editorial Department of Food and Fermentation Sciences & Technology

Address: 98# Medium Section, Liuhe Road Wenjiang District, Chengdu City, Sichuan, China

Postcode: 611130

Tel: 028-82763572

Fax: 028-82763572

Contribution platform website: <http://sksf.cbpt.cnki.net>

E-mail: sfaf 8889@163.com, sfaf 789@sina.com

[Http://www.SC-FFM.com](http://www.SC-FFM.com)

Printed by: Workshop of Sichuan Coalfield Geology Charting

Issue Scope: Issued openly at Home and Abroad

Ordered at: Local Post Office or the Editorial Department

International Standard No: ISSN1674-506X

Domestic Unified No: CN51-1713/TS

Fixed Price: RMB 22.00 Every Issue

CONTENTS

Optimization and Improvement of Total Triterpenes Yield of <i>Phellinus</i> sp.YC-1 by Fermentation with Response Surface Methodology	YANG Cai-yun, LIU Xiao-feng, WANG Guang-qiang, et al.(1)
Selenium-enriched <i>Cyclocarya paliurus</i> and <i>Cordyceps militaris</i> Compound Immunity and Antioxidant Experiment Research in Mice	LUO Dan, CHEN Dan, BAI Xi-chen, et al. (8)
Optimization of the Process of the Soft-boiled Preserved Eggs Made by the Early-laying Eggs and Dynamic Analysis During Curing	SHI Deng-hui, SU Wei, MU Ying-chun, et al.(14)
Effect of Calcium Chloride Treatment on Postharvest Quality of <i>Zizania latifolia</i>	DONG Gui-jun, QIAO Yong-jin, LIU Chen-xia, et al.(23)
Study on the Quality Changes of Garlic Sprouts and Pork after Frying and Cooking Based on the Theory of Maturity Value	ZHAO Ting-xia, DENG Li, LI Jing-peng, et al.(32)
Effects of Different Blended Ratios on Aroma Compounds of Zaosu Pear-Kiwi Mixed Fruit Wine	SONG Xin-yuan, LI Jie-chun, YANG Xue-shan, et al.(39)
Analysis of Flavor Substances and Microbial Community Structure of German Trial-produced Paocai	HUANG Run-qiu, LI Jia-yi, MING Jian-ying, et al.(51)
Study on Extrusion Technology and in Vitro Digestion Characteristics of Low GI Quinoa Noodles	ZHANG Xin, REN Yuan-yuan, MENG Zi-kuan, et al.(57)
Analysis of Main Flavor Compounds and Aroma Evaluation of Dahongpao <i>Zanthoxylum bungeanum</i> in Four Different Regions	HAO Xu-dong, ZHANG Sheng-gui, WANG Qian-wen, et al.(63)
Optimization of Autolysis Process of Antarctic Krill (<i>Euphausia superba</i>) and Umami Evaluation of its Autolysates	ZHAO Lu-kai, WANG Meng-juan, WANG Ling-zhao, et al.(75)
Effect of Pomelo Seed Oil Microcapsule on Anaerobic Threshold and Performance of Middle and Long Distance Runners	LIU Jin-sheng, FANG Lei, ZHAO Jin-jin(81)
Effect of Interfacial Anisotropy on Ice Crystal Growth Behavior During Quick-frozen Preservation Process	YANG Yan, LI Na, YUAN Xun-feng(86)
Development of Pixian Douban Mustard Sauce	LI Long, LI Jie-zhi, LI Heng, et al.(91)
Study on Purification Technology of Waste Gas from Food Processing	FANG Zhou, GUO Yan-peng, LI Yu-zhu(98)
Advances in the Research on the Deterioration of Crustacean Aquatic Products and the Low Temperature Preservation and Its Auxiliary Technologies	WANG Fang, ZHOU Guo-yan(106)
Research Progress on Fermentation Technology of Traditional Chinese Medicine "Medicated Leaven"	PANG Si-qi, MA Jia-qing, LIN Jia-hui, et al.(113)
Determination of Betaine in Fermentation Liquid by High Performance Liquid Chromatography	LI Ning-ning, FENG Bo, ZHENG Ke-yi, et al.(117)
Determination of Hydrochlorothiazide in Health Products by Ultra Performance Liquid Chromatography-tandem Mass Spectrometry	PENG Ming-jun, LIN Zi-hao, ZENG Hao-wei, et al.(122)
Optimization of the Pretreatment Method for the Determination of Tetramethylpyrazide in Solid Brewing Matrix by Gas Chromatography	PENG Kui, SHEN Yi, GUO Jie, et al.(127)
Research on Multi-objective Integrated Management Model of Technical Renovation Project of Baijiu Production Based on Chain-pole Equilibrium Principle	ZENG Feng-ming, AO Ling(131)
Practice and Exploration of Sharing Management of Large-scale Instruments and Equipment in Food Specialty Relying on the Test Science Center	CHEN Yan, LIU Jing-bo, WANG Er-lei(139)
Cultivation and Evaluation of Innovation and Entrepreneurship Ability of Food Majors Based on OBE Model	YANG Li-na, CUI Shi-kun, CAO Xue-hui, et al.(144)
Discussion on the Exploration and Practice of Ideological and Political Education in the Course of Food Engineering Principles	XI Chun-yu, ZHANG Yan, WANG Xiao-dan, et al.(147)

美好®

新品上市

火锅必备 原切味正



产品及包装以实物为准



精选牛肉，原肉整切。
免切免调味，省时又省心！

ISSN 1674-506X



9 771674 506211