

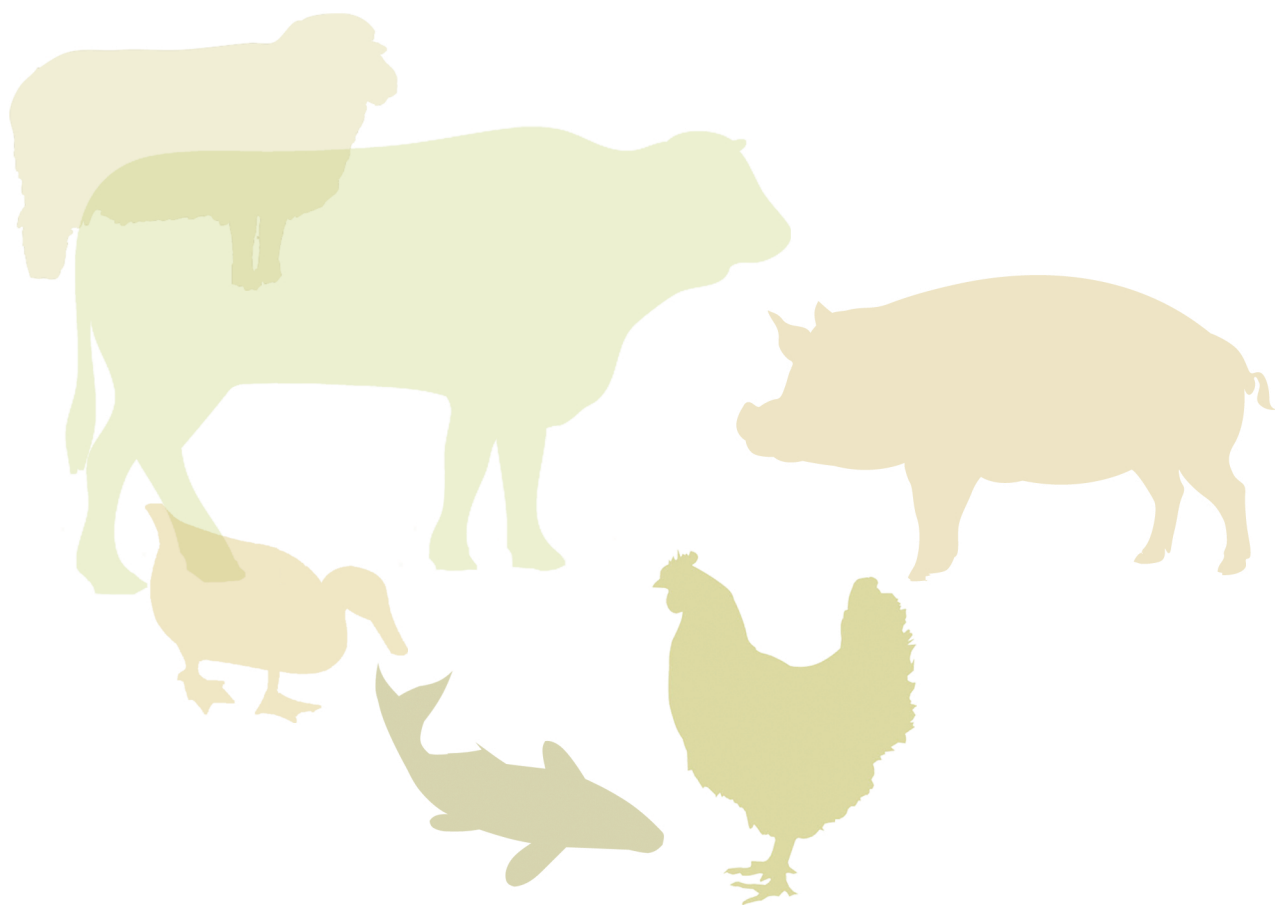


ISSN 1006-267X
CN 11-5461/S

动物营养学报

CHINESE JOURNAL OF ANIMAL NUTRITION

www.ChinaJAN.com



Vol.34 No.10
2022

中国畜牧兽医学会
CHINESE ASSOCIATION OF
ANIMAL SCIENCE AND VETERINARY MEDICINE

动物营养学报

第三十四卷

第十期

二〇二二年

中国畜牧兽医学会

动物营养学报

DONGWU YINGYANG XUEBAO

百种中国杰出学术期刊 期刊数字影响力 100 强(学术类期刊)
中国精品科技期刊 中国科学引文数据库(CSCD)核心库来源期刊 中国科技核心期刊
中文核心期刊 中国科学评价研究中心权威期刊(A⁺级) 荷兰 Scopus 收录期刊
英国 CAB Abstracts 收录期刊 美国 Chemical Abstracts 收录期刊

第 34 卷 第 10 期 2022 年 10 月

目 次

饲料营养研究进展专栏

6121 商品猪精准营养技术研究进展	杨雪芬 蒋宗勇
6132 生猪动态营养需求研究现状及发展路径探讨	黄瑞林 丁 婧 冯泽猛 印遇龙
6146 猪低蛋白质饲料研究进展	周俊言 曾祥芳 譙仕彦
6152 饲料霉菌毒素的生物降解研究进展	王晓璐 罗会颖 姚 斌
6160 仔猪碳水化合物营养平衡与肠道健康研究进展	周 华 余 冰 何东亭 陈代文
6167 母猪能量和蛋白质营养研究进展	吴 德 林 燕 王 亚
6178 反刍动物瘤胃营养生理研究进展	刘军花 张 凯 毛胜勇 朱伟云
6185 发酵饲料对猪肉品质的影响及机制研究进展	王 成 靳明亮 单体中 汪以真
6193 胃肠道-肝脏-乳腺协同调节奶牛乳成分的机制	邓 露 张 俊 姚军虎
6203 阿魏酸酯酶促进粗纤维降解的作用机制及其在饲料工业中的应用	成艳芬 马 菁 朱伟云
6213 低蛋白质饲料对家禽肠道健康的影响研究进展	焦洪超 刘 慧 林 海
6220 尾菜资源饲料化开发与利用的研究进展	孟庆维 李家维 单安山
6227 精准饲养的环境创新研究进展与方向	张宏福 尹 畅 陈 亮
6235 油脂的营养生理功能及其在动物饲料中的高效利用	尹靖东 赖州文
6242 纤维组分发酵特性及其肠道健康效应	王军军 白 宇 赵金标
6249 呕吐毒素对猪肠道屏障的影响及其营养调控研究进展	张 薇 牛军龙 郭永鹏 王志祥
6257 N ⁶ -甲基腺嘌呤 RNA 甲基化在动物营养生理与代谢中的表观转录调控作用	钟 翔 王 欢 王 恬
6265 宫内发育迟缓对仔猪肠道微生物的影响及营养调控	孔祥峰 余祖功 刘 洋
6271 猪、禽病原性肠道损伤营养调控研究进展	张焱焱 张 倩 郭双双 侯永清
6281 中国地方猪种肠道微生物功能发掘与利用的研究进展	石宝明 鲍嘉欣 赵 轩
6291 猪肉质风味成因及其品种与饲料营养效应探究	徐子伟 门小明
6298 肉鸡肌纤维性状形成机制及调控的研究进展	贺 喜 宋泽和 常 凌
6306 反刍动物酶制剂改善瘤胃酶菌协同生态体系的理论探索与实践研究	冯定远 左建军
6314 经济作物副产物饲用价值提升及在牛羊饲料中的应用	杨春涛 屠 焰 刁其玉
6327 饲料纤维理化特性对猪小肠营养物质消化影响的研究进展	车东升 刘 博 永 锋 韩 蕊
6334 母猪卵泡发育质量的营养调控研究进展	徐保阳 秦文峡 晏向华
6343 浒苔多糖的营养生理功能及其饲用化前景研究进展	邹田德 谌 俊 游金明

6352	肠道类器官在畜禽营养中的研究进展	王 丹	刘玉兰		
6358	肠道炎症的发生机制及其营养调控研究进展	魏宏逵	吴晓宇	崔琛彬	彭 健
6371	沙葱及其提取物对羊肉膻味的调控作用研究进展	敖长金	赵亚波	白 晨	
		哈斯额尔敦			
6379	羊肉多不饱和脂肪酸组成的影响因素及其营养调控	闫素梅	孟凡珠	刘树林	
6388	胃肠道线虫感染对反刍动物的影响及其防控措施研究进展	钟荣珍	王在森	向 海	
6396	奶牛过瘤胃氨基酸生物利用率评价与应用	卜登攀	姚瑞芬	詹腾飞	
6404	柠条锦鸡儿营养特性及其提取物对绵羊抗氧化作用的研究进展	薛树媛	刘 洋	王宇飞	高秀芳
6411	植物精油在反刍动物生产中的应用研究进展	李艳玲	唐炜轩		
6420	家禽免疫营养及其系统性调控研究	杨小军	尹振晨	任周正	杨 欣
6429	微生物发酵饲料在动物生产中应用的研究进展	张爱忠	许 威	赵芳芳	姜 宁
6436	高湿玉米制作工艺研究及应用进展	郭凯军	尚松林	李佳骏	窦金焕
6444	家兔毛囊生长发育及其营养调控	刘 磊	李 淑	李福昌	
6451	植物提取物活性成分鉴定方法研究进展	方洛云	蒋林树		

研究论文

6459	妊娠后期及泌乳期添加异黄酮-S 对母猪繁殖性能、抗氧化能力、免疫功能的影响	李 帅	温晓鹿	蒋宗勇	王 丽
6469	不同蛋白质来源的饲料原料饲喂生长猪有效能值和氨基酸消化率评定	高开国	肖 昊		
		麻龙腾	吴 聪	王丽芬	张梓熹
6483	2 种不同加工工艺氧化锌对断奶仔猪生长性能和肠道健康的比较研究	宋泽和	贺 喜	马晓康	
		赖金花	王仁杰	贾 海	宋 转
6491	氧化锌对感染猪流行性腹泻病毒的新生阶段仔猪生长性能、肠道屏障功能和抗氧化能力的影响	李 俊	司雪萌	武振龙	
		王思甜	郑丽云	齐 雅	刘志鹏
6502	包被丁酸钠对蛋鸡生产性能和肠道健康的影响	郭双双	侯永清	张正帆	丁斌鹰
		张 琦	张克英	白世平	王建萍
		曾秋风	彭焕伟	玄 玥	张 博
		丁雪梅			
6514	发酵罗汉果渣对黄羽肉鸡生长性能、血清生化指标和肉品质的影响	梁丽芬	孙 涛	李铁军	宾石玉
		侯振平			
6527	重组人溶菌酶对黄羽肉鸡生长性能、免疫功能和肠道健康的影响	林厦菁	茅沈丽	范秋丽	林泽铃
		蒋守群	陈达凯	李月俏	陈禹兴
		杨创钦	陈聪伟	邓远倪	
6539	啤酒糟替代饲料粮中不同比例精料对湖羊生长性能、营养物质表观消化率、氮代谢和血清生化指标的影响	李文杨	王迎港	吴贤锋	刘庆华
		刘 远			
6550	妊娠后期添加丁酸钠对湖羊母羊生长性能、养分表观消化率、血清抗氧化和免疫指标及羔羊生长性能的影响	张昕妍	段春辉	杨若晨	张赛伟
		李 菲	张英杰		
6565	饲料中发酵豆渣添加水平对不同品种山羊营养物质消化代谢的影响	刘 远	吴贤锋	王迎港	李文杨
6576	高精料饲料粮中添加 5,6-二甲基苯并咪唑和钴对绵羊生长性能及消化代谢的影响	张 瑞	阮 超	熊素玉	臧长江
		成志强	焦毅灵	余英英	李晓斌
		李凤鸣	雒秋江		
6587	饲料中添加岩藻多糖对断奶羔羊器官指数、肝功能指标、肝脏和脾脏抗氧化能力以及脾脏免疫功能的影响	王嘉麟	许悦雯	王胜男	邱晓媛
		吴鹏鑫	高振华	赵志辉	于 辉
		尹福泉			

6596	饲粮不同快速发酵碳水化合物和慢速发酵碳水化合物比例对泌乳驴血浆指标及产乳性能的影响	许 涛	张淑贤	贾瑜艳	郝建东
		于治成	周小玲		
6609	葛根多糖对健康犊牛基础临床指标、生理生化指标及血浆代谢物的影响	莘 余	吕尚揆	尤留超	樊 磊
		张 琼	苏柘僮	曹随忠	余树民
		沈留红			
6620	大菱鲆和红鳍东方鲀脂肪酸转运蛋白的组织分布及营养调控	赵丽丽	王迪欣	廖章斌	毕清竹
		马 强	卫育良	梁萌青	乔秀亭
		程镇燕	徐后国		
6634	饲料中添加枯草芽孢杆菌 HSP05 对凡纳滨对虾生长性能、抗病力和非特异性免疫力的影响	于道德	陈胜林	郭少菁	樊 英
		王晓璐	宋静静	刘洪军	
6643	发酵豆粕替代鱼粉时添加不同水平晶体精氨酸对凡纳滨对虾生长及抗应激能力的免疫调控	刘 韬	潘韵超	夏 燕	杨培江
		华雪铭			
6654	家养林麝饲用植物叶养分特征和营养价值综合评价	王永奇	李斐然		
6665	酵母菌-凝结芽孢杆菌联合发酵培养物对獭兔生长性能、养分表观消化率、免疫力及抗氧化能力的影响	王国洲	吴峰洋	于志凯	孔令昌
		王俊峰	刘亚娟	陈宝江	
6677	豆粕不同加工工艺对肉兔颗粒饲料加工特性、养分表观消化率和血清免疫指标的影响	李昕楠	丛雪艳	杨桂芹	李方方
		梁丽萍	权志中		
6687	饲粮添加粪肠球菌对生长期乌苏里貉生长性能、氮代谢、血清生化指标及粪便菌群的影响	白银龙	牛一兵	张海华	巩文洋
		曲毅程	龙 娟	王夕国	巩元芳
		赵惠媛	李素芬	冯敏山	
6695	姜酮缓解 3-乙酰呕吐毒素诱导的猪肠上皮细胞损伤研究	张同坤	贾 海	季 昀	杨 鹰
		武振龙			
6702	黄芪甲苷对脂多糖刺激的奶牛乳腺上皮细胞乳蛋白及乳脂合成相关因子表达的影响	樊嘉琦	周学章		
6714	大豆活性肽对体外过氧化氢诱导的奶牛乳腺上皮细胞氧化应激和炎症损伤的缓解作用	陈 逸	张一涵	张 静	屠 焰
		王 慧	蒋林树		
6726	载牛乳铁蛋白肽-壳聚糖纳米粒对过氧化氢诱导的奶牛乳腺上皮细胞氧化损伤的保护作用	李 欣	牛 慧	詹经纬	关淑文
		屠 焰	蒋林树		
6737	白术多糖通过 Toll 样受体 4/p38 丝裂原活化蛋白激酶信号通路缓解脂多糖诱导的雏鹅法氏囊损伤	张冰琪	李冰心	杨保和	袁明凤
		李婉雁	曹 楠	许丹宁	田允波
		陈文斌			
6748	动物肠道内容物中 8 种酸性低聚糖的液相色谱-质谱联用测定方法	许丽卫	孙德慧	耿梅梅	陈 闻
		贺志雄	王久荣		
6758	猪粪便微生物移植小鼠肠道菌群结构演替分析	宋园园	施伟领	章啸君	杨 华
		吴酬飞	肖英平		
6768	苜蓿素对高脂饲粮诱发的大鼠血管内皮损伤的治疗作用	郭炎峰	郭海海	范玉雪	程国强
		王永雄			
6781	不同浓度亚麻籽油对黑水虻幼虫生长性能、虫体营养组分及多不饱和脂肪酸构成的影响	李振阳	郭 震	孙嘉伯	丁向彬
		张建斌	洪 亮	张林林	胡德宝
6790	一株羊源弯曲乳杆菌的分离及安全性评价	向微微	叶梦珺	候 萌	银方方
		刘雅薇	王银龙	潘 睿	王金泉

CONTENTS

SPECIAL COLUMN: RESEARCH PROGRESS ON FEED NUTRITION

- 6121 Research Progress on Precision Nutrition Technology of Commercial Pigs YANG Xuefen, JIANG Zongyong
- 6132 Research Status and Development Path Exploration of Dynamic Nutritional Requirements of Pigs HUANG Ruilin, DING Jing, FENG Zeming, YIN Yulong
- 6146 Advances in Low-Protein Diets Research for Swine ZHOU Junyan, ZENG Xiangfang, QIAO Shiyan
- 6152 Advances in Research on Biodegradation of Mycotoxins in Feed WANG Xiaolu, LUO Huiying, YAO Bin
- 6160 Research Progress on Carbohydrate Nutrition Balance and Intestinal Health in Piglets ZHOU Hua, YU Bing, HE Dongting, CHEN Daiwen
- 6167 Research Progress on Energy and Protein Nutrition of Sows WU De, LIN Yan, WANG Ya
- 6178 Research Progress on Rumen Nutrition and Physiology in Ruminants LIU Junhua, ZHANG Kai, MAO Shengyong, ZHU Weiyun
- 6185 Research Progress on Effect and Mechanism of Fermented Feed on Pork Quality WANG Cheng, JIN Mingliang, SHAN Tizhong, WANG Yizhen
- 6193 Mechanism of Gastrointestinal Tract-Liver-Mammary Gland Co-Regulating Milk Components of Dairy Cows DENG Lu, ZHANG Jun, YAO Junhu
- 6203 Mechanism of Feruloyl Esterase Promoting Degradation of Crude Fiber and Its Application in Feed Industry CHENG Yanfen, MA Jing, ZHU Weiyun
- 6213 Research Advance on Effects of Low-Protein Diet on Intestinal Health of Poultry JIAO Hongchao, LIU Hui, LIN Hai
- 6220 Research Progress on Development and Utilization of Vegetable Waste Feed Resources MENG Qingwei, LI Jiawei, SHAN Anshan
- 6227 Research Progress and Direction of Environmental Innovation of Precision Feeding ZHANG Hongfu, YIN Chang, CHEN Liang
- 6235 Nutritional and Physiological Functions of Oils and Fats and Their Efficient Use in Animal Diets YIN Jingdong, LAI Zhouwen
- 6242 Fermentation Characteristics and Intestinal Health Effects of Fiber Components WANG Junjun, BAI Yu, ZHAO Jinbiao
- 6249 Research Progress of Effects of Deoxynivalenol on Intestinal Barrier and its Nutritional Regulation in Pigs ZHANG Wei, NIU Junlong, GUO Yongpeng, WANG Zhixiang
- 6257 Epigenetic and Transcriptional Regulation of *N*⁶-Methyladenosine RNA Methylation in Animal Nutritional Physiology and Metabolism ZHONG Xiang, WANG Huan, WANG Tian
- 6265 Effects of Intrauterine Growth Retardation on Intestinal Microbiota and Nutritional Regulation in Piglets KONG Xiangfeng, YU Zugong, LIU Yang
- 6271 Research Progress on Nutritional Regulation of Pathogenic Intestinal Injury in Pigs and Poultry ZHANG Yanyan, ZHANG Qian, GUO Shuangshuang, HOU Yongqing
- 6281 Research Progress on Exploitation and Utilization of Intestinal Microbial Function in Chinese Native Pigs SHI Baoming, BAO Jiaxin, ZHAO Xuan
- 6291 Pork Flavor Formation and Its Influencing Factors Exploration from Breeds and Feed Nutrition XU Ziwei, MEN Xiaoming
- 6298 Research Progress on Mechanism and Regulation of Chicken Muscle Fiber Development HE Xi, SONG Zehe, CHANG Ling
- 6306 Theoretical Exploration and Practical Study of Ruminant Enzyme Preparation to Improve Synergistic Ecosystem of Rumen Enzyme and Bacteria FENG Dingyuan, ZUO Jianjun
- 6314 Feeding Value Enhancement of Cash Crop By-Products and Its Application in Cattle and Sheep Diet YANG Chuntao, TU Yan, DIAO Qiyu
- 6327 Effects of Physicochemical Properties of Dietary Fiber on Nutrient Digestion in Intestine of Pigs CHE Dongsheng, LIU Bo, YONG Feng, HAN Rui
- 6334 Advances in Nutritional Regulation of Follicular Development Quality of Sows XU Baoyang, QIN Wenxia, YAN Xianghua
- 6343 Research Progress of Nutritional Physiology Function and Feeding Prospects of *Enteromorpha Prolifera* Polysaccharide ZOU Tiande, CHEN Jun, YOU Jinming
- 6352 Research Progress of Intestinal Organoids in Livestock and Poultry Nutrition WANG Dan, LIU Yulan

- 6358 Research Progress of Mechanism of Intestinal Inflammation and Its Nutritional Regulation
- 6371 Research Progress on Regulation of *Allium mongolicum* Regel and Its Extracts on Mutton Flavour
- 6379 Influencing Factors of Polyunsaturated Fatty Acid Composition in Mutton and Its Nutritional Regulation
- 6388 Research Progress on Effects of Gastrointestinal Nematode Infection on Ruminants and Its Control Measures
- 6396 Evaluation and Application of Rumen Protected Amino Acid Bioavailability in Dairy Cows
- 6404 Research Progress on Nutritional Characteristics of *Caragana korshinskii* Kom. and Antioxidant Effect of Its Extracts on Sheep
- 6411 Research Progress of Plant Oil Application in Ruminant Animal Production
- 6420 Immunonutrition and Its Systematic Regulation in Poultry
- 6429 Research Progress of Microbial Fermented Feed in Animal Production
- 6436 Progress of High Moisture Corn Process Technique and Its Application
- 6444 Hair Follicle Growth and Development of Rabbits and Its Nutrition Regulation
- 6451 Research Progress on Identification Methods of Active Ingredients in Plant Extracts

RESEARCH PAPER

- 6459 Effects of Dietary Supplementation of Isoflavone-S in Late Gestation and Lactation on Reproductive Performance, Antioxidant Capacity and Immune Functions of Sows
- 6469 Evaluation of Effective Energy Value and amino Acid Digestibility of Feed Materials with Different Protein Sources of Growing Pigs
- 6483 Comparative Study of Zinc Oxide with Two Different Processing Techniques on Growth Performance and Intestinal Health of Weaned Piglets
- 6491 Effects of Zinc Oxide on Growth Performance, Intestinal Barrier Function and Antioxidant Capacity of Neonatal Piglets Infected with Porcine Epidemic Diarrhea Virus
- 6502 Effects of Coated Sodium Butyrate on Performance and Intestinal Health of Laying Hens
- 6514 Effects of Fermented *Siraitia grosvenorii* Residue on Growth Performance, Serum Biochemical Indexes and Meat Quality of Yellow-Feathered Broilers
- 6527 Effects of Recombinant Human Lysozyme on Growth Performance, Immune Function and Intestinal Health of Yellow-Feathered Broilers
- 6539 Effects of Different Proportions of Concentrate Replaced by Brewer's Grains in Diets on Growth Performance, Nutrient Apparent Digestibility, Nitrogen Metabolism and Serum Biochemical Indices of *Hu* Sheep
- 6550 Effects of Sodium Butyrate Supplementation during Late Gestation on Growth Performance, Nutrient Apparent Digestibility, Serum Antioxidant and Immune Indices of *Hu* Sheep Ewes and Growth Performance of Lambs
- 6565 Effects of Dietary Fermented Soybean Curd Residue Supplemental Level on Digestion and Metabolism of Different Goat Breeds
- 6576 Effects of 5,6-Dimethylbenzimidazole and Cobalt Supplementation in High-Concentrate Diets on Growth Performance and Digestion and Metabolism of Sheep

WEI Hongkui, WU Xiaoyu, CUI Chenbin, PENG Jian
AO Changjin, ZHAO Yabo, BAI Chen, KHAS Erdene
YAN Sumei, MENG Fanzhu, LIU Shulin

ZHONG Rongzhen, WANG Zaisen, XIANG Hai
BU Dengpan, YAO Ruifen, ZHAN Tengfei

XUE Shuyuan, LIU Yang, WANG Yufei, GAO Xiufang
LI Yanling, TANG Weixuan

YANG Xiaojun, YIN Zhenchen, REN Zhouzheng, YANG Xin
ZHANG Aizhong, XU Wei, ZHAO Fangfang, JIANG Ning
GUO Kaijun, SHANG Songlin, LI Jiajun, DOU Jinhuan
LIU Lei, LI Shu, LI Fuchang

FANG Luoyun, JIANG Linshu

LI Shuai, WEN Xiaolu, JIANG Zongyong, WANG Li, GAO Kaiguo, XIAO Hao

MA Longteng, WU Cong, WANG Lifen, ZHANG Zixi, SONG Zehe, HE Xi, MA Xiaokang
LAI Jinhua, WANG Renjie, JIA Hai, SONG Zhuan, LI Jun, SI Xueming, WU Zhenlong
WANG Sitian, ZHENG Liyun, QI Ya, LIU Zhipeng, GUO Shuangshuang, HOU Yongqing, ZHANG Zhengfan, DING Binying
ZHANG Qi, ZHANG Keying, BAI Shiping, WANG Jianping, ZENG Qiufeng, PENG Huanwei, XUAN Yue, ZHANG Bo, DING Xuemei
LIANG Lifen, SUN Tao, LI Tiejun, BIN Shiyu, HOU Zhenping

LIN Xijiang, MAO Shenli, FAN Qiuli, LIN Zeling, JIANG Shouqun, CHEN DaKai, LI Yueqiao, CHEN Yuxing, YANG Chuangqin, CHEN Congwei, DENG Yuanni
LI Wenyang, WANG Yinggang, WU Xianfeng, LIU Qinghua, LIU Yuan

ZHANG Xinyan, DUAN Chunhui, YANG Ruochen, ZHANG Saiwei, LI Fei, ZHANG Yingjie

LIU Yuan, WU Xianfeng, WANG Yinggang, LI Wenyang
ZHANG Rui, RUAN Chao, XIONG Suyu, ZANG Changjiang, CHENG Zhiqiang, JIAO Yiling, YU Yingying, LI Xiaobin, LI Fengming, LUO Qiujiang

- 6587 Effects of Dietary Fucoidan on Organ Indexes, Liver Function Indexes, Liver and Spleen Antioxidant Capacity and Spleen Immune Function of Weaned Goat Kids
- 6596 Effects of Different Ratios of Dietary Fast Fermented Carbohydrate/Slow Fermented Carbohydrate on Plasma Indexes and Milk Performance of Lactating Donkeys
- 6609 Effects of *Pueraria* Polysaccharides on Basic Clinical Indices, Physiological and Biochemical Indices and Plasma Metabolites of Healthy Calves
- 6620 Tissue Distribution and Nutritional Regulation of Fatty Acid Transport Protein in *Scophthalmus maximus* and *Takifugu rubripes*
- 6634 Effects of Dietary *Bacillus subtilis* HSP05 on Growth Performance, Disease Resistance and Non-Specific Immunity of *Litopenaeus vannamei*
- 6643 Immune Regulation of Different Levels of Crystalline Arginine on Growth and Anti-Stress Ability of *Litopenaeus vannamei* When Fish Meal Replaced by Fermented Soybean Meal
- 6654 Comprehensive Evaluation of Nutrient Characteristics and Nutritive Value of Forage Plant Leaves for Captive Forest Musk Deer (*Moschus berezovskii*)
- 6665 Effects of Combined Yeast and *Bacillus coagulans* Fermentation Culture on Growth Performance, Nutrient Apparent Digestibility, Immunity and Antioxidant Capacity of Rex Rabbits
- 6677 Effects of Different Processing Technologies of Soybean Meal on Pellet Feed Processing Characteristics, Nutrient Apparent Digestibility and Serum Immune Indices of Meat Rabbits
- 6687 Effects of Dietary *Enterococcus faecalis* on Growth Performance, Nitrogen Metabolism, Serum Biochemical Indices and Fecal Microbiota of Growing Ussuri Raccoon Dogs
- 6695 Study on Zingerone Alleviating Injury of Porcine Intestinal Epithelial Cells Induced by 3-Acetyldeoxynivalenol
- 6702 Effects of Astragaloside IV on Expression of Milk Protein and Milk Fat Synthesis-Related Factors in Lipopolysaccharide-Stimulated Milk Bovine Mammary Epithelial Cells
- 6714 Alleviation Effect of Soybean Bioactive Peptide on Oxidative Stress and Inflammatory Injury of Bovine Mammary Epithelial Cells Induced by Hydrogen Peroxide *in Vitro*
- 6726 Protective Effects of Bovine Lactoferrin Chitosan Nanoparticles on Oxidative Damage of Dairy Cow Mammary Epithelial Cells Induced by Hydrogen Peroxide
- 6737 Polysaccharide of *Atractylodes macrocephala* Koidz Alleviates Lipopolysaccharide Induced Bursa of Fabricius Injury in Goslings through Toll-Like Receptor 4/p38 Mitogen Activated Protein Kinase Signaling Pathway
- 6748 Determination Method of Eight Acidic Oligosaccharides in Animals' Intestinal Contents by Liquid Chromatography-Mass Spectrometry
- 6758 Succession Analysis of Intestinal Microbiota Structure of Mice with Pig Fecal Microbiota Transplantation
- 6768 Therapeutic Effects of Ticin on High-Fat Diet-Induced Vascular Endothelial Injury in Rats
- 6781 Effects of Different Concentrations of Flaxseed Oil on Growth Performance, Body Nutrient Composition and Polyunsaturated Fatty Acids Composition of *Hermetia illucens* Larvae
- 6790 Isolation and Safety Evaluation of a Sheep-Derived *Lactobacillus curvatus*
- WANG Jialin, XU Yuewen, WANG Shengnan, QIU Xiaoyuan, WU Pengxin, GAO Zhenhua, ZHAO Zhihui, YU Hui, YIN Fuquan
XU Tao, ZHANG Shuxian, JIA Yuyan, HAO Jiandong, YU Zhicheng, ZHOU Xiaoling
SHEN Yu, LYU Shangkui, YOU Liuchao, FAN Lei, ZHANG Qiong, SU Zhetong, CAO Suizhong, YU Shumin, SHEN Liuhong
ZHAO Lili, WANG Dixin, LIAO Zhangbin, BI Qingzhu, MA Qiang, WEI Yuliang, LIANG Mengqing, QIAO Xiuting, CHENG Zhenyan, XU Houguo
YU Daode, CHEN Shenglin, GUO Shaojing, FAN Ying, WANG Xiaolu, SONG Jingjing, LIU Hongjun
LIU Tao, PAN Yunchao, XIA Yan, YANG Peijiang, HUA Xueming
- WANG Yongqi, LI Feiran
- WANG Guozhou, WU Fengyang, YU Zhikai, KONG Lingchang, WANG Junfeng, LI Yajuan, CHEN Baojiang
LI Xinnan, CONG Xueyan, YANG Guiqin, LI Fangfang, LIANG Liping, QUAN Zhizhong
BAI Yinlong, NIU Yibing, ZHANG Haihua, GONG Wenyang, QU Yicheng, LONG Juan, WANG Xiguo, GONG Yuanfang, ZHAO Huiyuan, LI Sufen, FENG Minshan
ZHANG Tongkun, JIA Hai, JI Yun, YANG Ying, WU Zhenlong
FAN Jiaqi, ZHOU Xuezhang
- CHEN Yi, ZHANG Yihan, ZHANG Jing, TU Yan, WANG Hui, JIANG Linshu
- LI Xin, NIU Hui, ZHAN Jingwei, GUAN Shuwen, TU Yan, JIANG Linshu
- ZHANG Bingqi, LI Bingxin, YANG Baohe, YUAN Mingfeng, LI Wanyan, CAO Nan, XU Danning, TIAN Yunbo, CHEN Wenbin
XU Liwei, SUN Dehui, GENG Meimei, CHEN Wen, HE Zhixiong, WANG Jiurong
- SONG Yuanyuan, SHI Weiling, ZHANG Xiaojun, YANG Hua, WU Choufei, XIAO Yingping
GUO Yanfeng, GUO Haihai, FAN Yuxue, CHENG Guoqiang, YU Yongxiong
LI Zhenyang, GUO Zhen, SUN Jiabo, DING Xiangbin, ZHANG Jianbin, HONG Liang, ZHANG Linlin, HU Debao
XIANG Weiwei, YE Mengjun, HOU Meng, YIN Fangfang, LIU Yawei, WANG Yinlong, PAN Rui, WANG Jinquan