

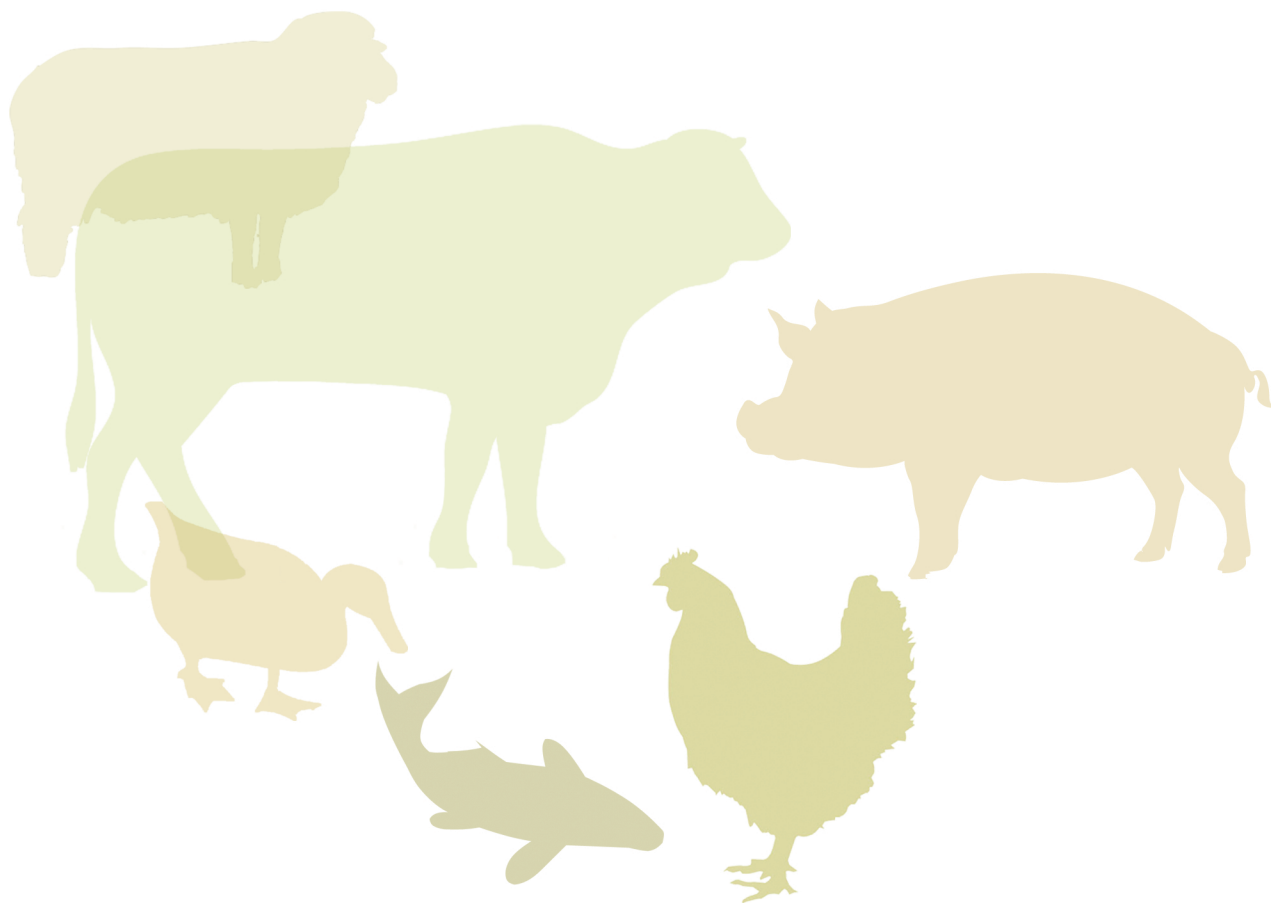


ISSN 1006-267X  
CN 11-5461/S

# 动物营养学报

CHINESE JOURNAL OF ANIMAL NUTRITION

[www.ChinaJAN.com](http://www.ChinaJAN.com)



Vol.34 No.6  
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

第六期

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<sup>+</sup>级)

英国 CAB Abstracts 收录期刊 美国 Chemical Abstracts 收录期刊

第 34 卷 第 6 期 2022 年 6 月

## 目 次

### 综述

- |  |     |     |     |     |
|--|-----|-----|-----|-----|
| 3401 抗菌肽在动物生产中应用的研究进展                        | 来振衡 | 陈虹羽 | 吕银凤 | 单安山 |
| 3411 反刍动物瘤胃甲烷产生与排放的主要生物学特征                   | 贾 鹏 | 董利锋 | 屠 焰 | 刁其玉 |
| 3418 幼龄反刍动物瘤胃微生物的定植过程及早期调控                   | 李科南 | 杜海东 | 史彬林 | 娜仁花 |
| 3427 母体微生物垂直传播对幼龄反刍动物早期瘤胃微生物的影响研究进展          | 杜海东 | 李科南 | 娜仁花 |     |
| 3435 酵母水解物的生物学功能及其在猪生产中的应用                   | 殷成港 | 李习龙 | 蒋显仁 |     |
| 3443 牦牛乳组分及功能特性研究进展                          | 代安娜 | 杨具田 | 丁 波 | 刘红娜 |
| 3454 3-硝基氧基丙醇降低反刍动物瘤胃甲烷排放的作用机理以及在生产中的应用前景    | 周孝康 | 李 昊 | 张立阳 | 高腾云 |
| 3461 $\beta$ -羟基- $\beta$ -甲基丁酸在水产动物中应用的研究进展 | 杨晨斌 | 阎斌伦 | 高 焕 | 牟 华 |
| 3470 胆固醇在甲壳动物中的研究进展                          | 张 宇 | 王 笑 | 王爱民 | 潘亚雄 |
| 3483 黄酮类化合物在脂肪代谢中的作用机制研究进展                   | 钟 港 | 陈 东 |     |     |
| 3495 丁酸对脂肪代谢的调节及其作用机制                        | 徐 进 | 王 劼 | 舒鼎铭 | 王旭溟 |
| 3503 脂联素与其受体的结构及在脂类代谢中的作用机制                  | 郑 言 | 曹中赞 | 邱云桥 | 栾新红 |
| 3511 生物素对动物糖、脂代谢的影响及其作用机制                    | 晁碧辉 | 宋万明 | 李瑶兰 | 杨竹青 |
| 3519 丁酸梭菌对肠道屏障的影响机制及其在畜禽养殖中应用的研究进展           | 王宗伟 | 付建中 | 李洪涛 | 李艳青 |

### 研究论文

- |  |     |     |     |     |
|--|-----|-----|-----|-----|
| 3529 放牧对育肥后期苏山猪生长性能、胴体性状和肌肉品质的影响             | 李碧侠 | 任守文 | 赵为民 | 付言峰 |
|  | 王学敏 | 涂 枫 |     |     |
| 3537 桑叶提取物对断奶仔猪生长性能、养分表观消化率、抗氧化能力和免疫功能的影响    | 宋 敏 | 王超普 | 邓 盾 | 刘志昌 |
|  | 陈秋雨 | 崔艺燕 | 鲁慧杰 | 李贞明 |
|  | 余 苗 | 遆俊岭 | 马现永 |     |
| 3547 饲料桑对黄羽肉鸡生长性能、屠宰性能及肉品质的影响                | 黄 静 | 赵 娜 | 郭万正 | 陈 芳 |
|  | 樊启文 | 杜恩存 | 陶文静 | 张 巍 |
|  | 黄少文 | 金 枫 | 魏金涛 |     |
| 3559 饲料中添加不同组合的酸化剂对肉鸡肠道微生物菌群、肠道形态以及胃蛋白酶活性的影响 | 刘新泽 | 胡友军 | 赵晓南 | 张瑞阳 |
|  | 朱宇旌 | 张 勇 | 李方方 |     |
| 3570 棒晶束解离凹凸棒石对肉鸡生长性能、血清生化指标、抗氧化功能和肉品质的影响    | 王世祺 | 赵浩然 | 杜明芳 | 陈跃平 |
|  | 温 超 | 周岩民 |     |     |
| 3583 饲料粗蛋白质水平对育成鸡肝脏脂肪代谢和胆汁酸代谢的影响             | 袁逸涵 | 申 宇 | 杨 烨 |     |
| 3593 镉、铅、汞、铬和硒联合暴露对蛋鸡肝脏、肾脏、胫骨及血清中金属离子稳态的影响   | 张雨薇 | 李 浪 | 姜宇轩 | 宋景平 |
|  | 刘光芒 | 王建萍 | 林 燕 | 白世平 |
|  | 张克英 | 吴彩梅 |     |     |

3604	不同磷源和水平对 69~78 周龄蛋鸡产蛋性能和骨代谢的影响	任跃昌 刘亚萍 杨维仁	邓夕民 马璐璐	陈正平 张鹏飞	单忠芳 万波扬
3615	复合有机微量元素减量添加对肉鸭生长性能、肉品质、血清抗氧化能力和微量元素排泄的影响	赵陆原 葛超悦 余东游	邹晨浩 罗鑫宇	郭燕珊 林刚	曹久爱 刘兵
3627	碘对 5~16 周龄五龙鹅免疫性能、抗氧化性能及血清激素指标的影响	郝健中 于修臣	李星晨 李文立	慈洋	尹红吉
3635	种鸽饲料不同水平铁对乳鸽体重、屠宰性能、肉品质及血液指标的影响	赵东栋 秦士贞	李星 邵玉新	王铮 孙晓珊	史兆国 张小月
3645	瘤胃液、血浆及牛奶中奇链支链脂肪酸含量与其前体物含量的相关性	孙玲玲 温万	高胜涛 卜登攀	马露	沈旖帆
3657	地顶孢霉培养物对奶牛泌乳性能、血清生化和抗氧化指标及乳脂脂肪酸组成的影响	汲中元 杨永新	吴涛 韩荣伟	朱洪龙 程广龙	齐云霞 赵小伟
3666	沙棘黄酮对泌乳中期荷斯坦奶牛生产性能、乳中生物活性成分及血清生化和抗氧化指标的影响	张一涵 王慧	贺李莹 蒋林树	陈逸	熊本海
3676	泌乳盛期与泌乳后期奶牛乳腺氧代谢特征及乳腺健康状况的比较分析	彭文超 蔡杰	胡真真 刘建新	骆琳 王迪铭	邓蒙蒙
3686	抗菌肽对荷斯坦奶牛产肉性能的影响	孙建祥 程强	李泽民 张照	范凯利 张瑞	张晓 贾莉
3699	尼龙袋法评价奶水牛常用粗饲料的瘤胃降解特性	史金平 郭太情 戴思凡 周璟	王瑛 和少英 王梓蓓 毛华明	马越 王荣蛟 吴东旺 安清聪	雷赵民 和世春 余催
3710	7 种中草药对肉牛瘤胃体外发酵及甲烷产量的影响	丁子悦 王之盛 邹华围	薛白 王立志	蔡凌云 彭全辉	任伊凡 胡瑞
3724	黄芩茎叶对西门塔尔杂交牛生长性能及血清生化、免疫和抗氧化指标的影响	高旭红	张俊丽	岳彩娟	梁小军
3732	发酵稻草对安格斯牛生长性能、屠宰性能、血清生化指标及肉品质的影响	张转弟 李云鹤	张巧娥	王庆	李月
3743	饲料中添加布拉迪酵母对安格斯犊牛生长性能、血清免疫指标及粪便微生物区系的影响	薛帅帅 黄彩云 池春梅	李亚飞 郭娉婷 甘乾福	李可瑶 方绍明	刘浩宇 梁学武
3758	微生物饲料添加剂对固原黄牛生长性能和瘤胃微生物区系的影响	李茂龙 刘超齐	谢建亮 王利军	常娟 尹清强	王平 党晓伟
3768	放牧与舍饲对大通牦牛生长性能、瘤胃发酵参数、屠宰性能及肉品质的影响	姚喜喜 陈永珑	王伟	徐成体	刘皓栋
3777	饲养方式对大通牦牛瘤胃组织结构和瘤胃菌群多样性和组成的影响	姚喜喜 陈永珑	王伟 牛勇	徐成体 周双福	张瑞强
3788	玉米不同加工方式的开食料对羔羊早期断奶前和断奶后瘤胃发酵和微生物区系的影响	李勇 李彩联	蔡小芳 郭艳丽	张成新	刘鹏
3799	羔羊断奶应激期饲喂方式对其生长性能和血清生化指标的影响	史晨迪 段春辉 严慧	赵晓雅 张英杰	田沛知 刘月琴	陈佳欣 纪守坤
3814	零余子对绵羊生长性能、营养物质消化代谢、血清生化指标及免疫功能的影响	梁本聪 王林枫 张黎杰	杨改青 付彤 徐新颖	王福州 张立阳 刘新鹤	廉红霞 任宏 高腾云
3824	核桃青皮提取物对亚急性瘤胃酸中毒绵羊瘤胃发酵的影响	陈威 陈勇	陈炳龙	杨东林	张萧

3835	盐角草提取物对绵羊生长性能及血清生化指标的影响	梁兄弟	阿不夏合满·穆巴拉克		
		秦荣艳	陈翔宇	赵晨	王乐乐
		张志军	王承敏	王文奇	
		王笑言	刘武灵	孙清平	陈东
3847	饲料地顶孢霉培养物添加水平对山羊生长性能及血清生化、免疫和抗氧化指标的影响				
3857	栗木单宁对滩羊生长性能、肉质和肌肉脂肪酸组成的影响	齐明江	温红瑞	周玉香	史炜
		王绿叶	韩莉萍	吴光宇	
		崔浩然	白天天	赵林波	陈颜旭
		郭雪峰	金巍		
		李胜楠	张欢	董臣飞	雷晓青
		张桂杰			
3867	饲喂高比例棉籽壳饲料对多浪羊反刍行为、瘤胃发酵参数及营养物质表观消化率的影响	曹实	杨霖坤	鲁康乐	张春晓
		王玲	李学山	宋凯	
3875	复合菌制剂和复合酶制剂对柠条锦鸡儿青贮发酵品质和有氧稳定性的影响	詹海杰	李燕平	曹亮	党文庆
3884	酶解大豆分离蛋白替代鱼粉对花鲈生长性能、血清生化指标和脂肪代谢的影响	樊爱芳	任克良		
3896	“葡萄糖氧化酶+过氧化氢酶+柠檬酸”组合添加剂对商品肉兔生产性能、免疫指标及养分表观消化率的影响	刘福鑫	来宁洁	于志凯	蔡宇恒
		孙磊	刘亚娟	陈赛娟	陈宝江
		孙桂云	胡希怡	于静	王红芳
		刘振国	胥保华		
3918	饲料中添加精氨酸对意大利蜜蜂工蜂幼虫生理机能的影响	鲁曦	吴定燕	任珂	朱振宝
		钱卫生			
3930	肠毒性大肠杆菌 <i>eutR</i> 和 <i>eutB</i> 基因敲除对其生长繁殖和生物被膜生成量的影响	李述方	马甜	杨金丽	安雅雯
		张禹	杨晓东	王海荣	
3940	高精料饲料条件下苦豆子对育肥羔羊瘤胃上皮 <i>c-Jun</i> 氨基末端蛋白激酶/p38 丝裂原活化蛋白激酶信号通路及紧密连接蛋白表达的影响	刘曦宇	杜丽欣	万人汇	邹雪
3953	丙基菊粉纳米粒子作为益生元对植物乳杆菌抑菌性能的影响	张建斌	蒲蕾	马吉飞	胡德宝
		洪亮			
3962	酵母培养物促进干细胞增殖分化、改善小鼠肠上皮完整性	张得香	朱超	周加义	王修启
3972	基于肿瘤坏死因子信号通路探讨槲皮素对小鼠乳腺炎模型的作用机制	王桃	曹璐	米晓钰	吕琛
		赵兴绪	张勇		
3983	猪去氧胆酸对小鼠生长性能、能量代谢及脂肪消化吸收的影响	宋敏	马现永	张枫琳	王超普
		苏含	江青艳	王松波	
		王栋	何炎峻	柳可欣	邓守翔
		黄思琪	刘云		
3991	腐殖酸钠对肠产毒素性大肠杆菌 K88 感染小鼠肠道损伤的保护作用	庞丽丽	朱荣生	王怀中	王建才
		齐静	黄保华	呼红梅	
4003	三丁酸甘油酯对产肠毒素大肠杆菌 K88 诱发的小鼠肠道损伤的缓解作用	周万慧	胡亚婕	张萌	李晓双
		徐彬	杨玉英	李鹏	李士泽
4013	慢性冷暴露对小鼠产热及肝脏结构和脂质代谢相关蛋白表达的影响	孙宇	王宝维	张名爱	杨洵
4020	鸭油甘油二酯对肥胖大鼠减肥降脂作用与机制研究	尹佩佩	凡文磊	孔敏	
		李佩璇	吴志凯	孙有朋	符贻武
4032	乙氧喹对脂多糖和 D-氨基半乳糖诱导小鼠急性肝损伤的保护作用	王霞	王晶晶	周二顺	杨正涛
		李英英	丁立人	朱平华	曹新华
4041	复合菌株固态发酵对大豆皮营养价值的影响	李琪	李艳	朱崇森	杭苏琴
4050	一株具有清除棉酚作用的乳酸菌的分离、鉴定及其对棉籽粕发酵脱毒的研究	张琛	马季文	汪轶丽	李熙
		祝鑫	程茂基	陈丽娟	
4060	乳酸杆菌的分离鉴定及其对皇竹草青贮饲料发酵品质的影响	谢婷霞	曹雪笛	谭玉兰	李果
		晋蕾	刘书亮	敖晓琳	赵珂
		邹立扣			
4071	皇竹草与茅台酒糟混合青贮对其养分含量、发酵品质及微生物多样性的影响	李茂雅	成启明	李平	樊雪莹
		陈玉连	龙见华	陈超	

### CONTENTS

#### REVIEW

- 3401 Research Progress on Application of Antimicrobial Peptides in Animal Production
- 3411 Main Biological Characteristics of Methane Production and Emission in Ruminants
- 3418 Colonization Process and Early Regulation of Rumen Microorganisms in Young Ruminants
- 3427 Research Progress on Effects of Vertical Transmission of Maternal Microorganisms on Early Rumen Microorganisms in Young Ruminants
- 3435 Biological Functions of Yeast Hydrolysate and Its Application in Pig Production
- 3443 Research Progress on Components and Functional Characteristics of Yak Milk
- 3454 Mechanism of 3-Nitroxypropanol in Reducing Methane Emission from Ruminants' Rumen and Its Application Prospect in Production
- 3461 Research Progress of  $\beta$ -Hydroxy- $\beta$ -Methylbutyrate Application in Aquatic Animal
- 3470 Research Progress of Cholesterol in Crustaceans
- 3483 Research Progress on Mechanism of Flavonoids in Fat Metabolism
- 3495 Regulation and Mechanism of Butyric Acid on Fat Metabolism

- 3503 Structure of Adiponectin and Their Receptors and Action Mechanisms in Lipid Metabolism
- 3511 Effects and Mechanisms of Biotin on Glucose and Lipid Metabolism in Animals
- 3519 Research Progress on Mechanism of *Clostridium butyricum* Affecting Intestinal Barrier and Its Application in Livestock and Poultry Breeding

#### RESEARCH PAPER

- 3529 Effects of Grazing on Growth Performance, Carcass Traits and Muscle Quality of *Sushan* Pigs in Late Fattening Period
- 3537 Effects of Mulberry Leaf Extract on Growth Performance, Nutrient Apparent Digestibility, Antioxidant Ability and Immune Function of Weaned Piglets
- 3547 Effects of Feed Mulberry on Growth Performance, Slaughter Performance and Meat Quality of Yellow-Feathered Broilers
- 3559 Effects of Dietary Different Combinations of Acidifiers on Intestinal Microbial Flora, Intestinal Morphology and Pepsin Activity of Broilers
- 3570 Effects of Crystal-Bundles Disaggregated Palygorskite on Growth Performance, Serum Biochemical Indices, Antioxidant Function and Meat Quality of Broilers
- 3583 Effects of Dietary Crude Protein Level on Liver Lipid Metabolism and Bile Acid Metabolism of Growing Hens
- 3593 Effects of Cadmium, Lead, Mercury, Chromium and Selenium Co-Treatment on Metal Ion Homeostasis in Liver, Kidney, Serum and Tibia of Laying Hens
- 3604 Effects of Different Phosphorus Sources and Levels on Laying Performance and Bone Metabolism of Laying Hens Aged from 69 to 78 Weeks

LAI Zhenheng, CHEN Hongyu, LYU Yin-feng, SHAN Anshan  
JIA Peng, DONG Lifeng, TU Yan, DIAO Qiyu  
LI Ke'nan, DU Haidong, SHI Binlin, NA Renhua  
DU Haidong, LI Ke'nan, NA Renhua

YIN Chenggang, LI Xilong, JIANG Xianren  
DAI Anna, YANG Jutian, DING Bo, LIU Hongna  
ZHOU Xiaokang, LI Hao, ZHANG Liyang, GAO Tengyun  
YANG Chenbin, YAN Binlun, GAO Huan, MU Hua  
ZHANG Yu, WANG Xiao, WANG Aimin, PAN Yaxiong  
ZHONG Gang, CHEN Dong  
XU Jin, WANG Jie, SHU Dingming, WANG Xuming  
ZHENG Yan, CAO Zhongzan, QIU Yunqiao, LUAN Xinhong  
CHAO Bihui, SONG Wanming, LI Yaolan, YANG Zhuqing  
WANG Zongwei, FU Jianzhong, LI Hongtao, LI Yanqing

LI Bixia, REN Shouwen, ZHAO Weimin, FU Yanfeng, WANG Xuemin, TU Feng  
SONG Min, WANG Chaopu, DENG Dun, LIU Zhichang, CHEN Qiuyu, CUI Yiyan, LU Huijie, LI Zhenming, YU Miao, TI Junling, MA Xianyong  
HUANG Jing, ZHAO Na, GUO Wanzheng, CHEN Fang, FAN Qiwen, DU Encun, TAO Wenjing, ZHANG Wei, HUANG Shaowen, JIN Feng, WEI Jintao  
LIU Xinze, HU Youjun, ZHAO Xiaonan, ZHANG Ruiyang, ZHU Yujing, ZHANG Yong, LI Fangfang  
WANG Shiqi, ZHAO Haoran, DU Mingfang, CHEN Yueping, WEN Chao, ZHOU Yanmin  
YUAN Yihan, SHEN Yu, YANG Ye

ZHANG Yuwei, LI Lang, JIANG Yuxuan, SONG Jingping, LIU Guangmang, WANG Jianping, LIN Yan, BAI Shiping, ZHANG Keying, WU Caimei  
REN Yuechang, DENG Ximin, CHEN Zhengping, SHAN Zhongfang, LIU Yaping, MA Lulu, ZHANG Pengfei, WAN Boyang, YANG Weiren

- 3615 Effects of Reduction Adding of Compound Organic Trace Mineral on Growth Performance, Meat Quality, Serum Antioxidant Capacity and Trace Element Excretion of Meat Ducks
- 3627 Effects of Iodine on Immune Performance, Antioxidant Performance and Serum Hormone Indexes of *Wulong* Geese Aged from 5 to 16 Weeks
- 3635 Effects of Different Levels of Iron in Breeding Pigeon Diets on Body Weight, Slaughter Performance, Meat Quality and Blood Indexes of Squabs
- 3645 Correlation between Content of Odd- and Branched-Chain Fatty Acids in Rumen Fluid, Plasma and Milk and Their Precursors Content
- 3657 Effects of *Acremonium terricola* Culture on Lactation Performance, Serum Biochemical and Antioxidant Indexes and Milk Fatty Acids Composition of Dairy Cows
- 3666 Effects of Seabuckthorn Flavonoids on Performance, Milk Bioactive Components and Serum Biochemical and Antioxidant Indexes of Holstein Cows in Mid-Lactation
- 3676 Comparative Analysis on Oxygen Metabolic Traits and Mammary Health Status of Early-Lactating and Late-Lactating Dairy Cows
- 3686 Effects of Antimicrobial Peptides on Meat Performance of Holstein Dairy Bulls
- 3699 Evaluation of Rumen Degradation Characteristics of Common Roughages for Dairy Buffaloes by Nylon Bag Method
- 3710 Effects of 7 Kinds of Chinese Herbs on *in Vitro* Rumen Fermentation and Methane Production of Beef Cattle
- 3724 Effects of *Scutellaria Baicalensis* Stem and Leaf on Growth Performance and Serum Biochemical, Immune, Antioxidant Indexes of Simmental Crossbred Cattle
- 3732 Effects of Fermented Rice Straw on Growth Performance, Slaughter Performance, Serum Biochemical Indexes and Meat Quality of Angus Cattle
- 3743 Effects of Dietary Supplementation of *Saccharomyces boulardii* on Growth Performance, Serum Immune Indexes and Fecal Microflora of Angus Calves
- 3758 Effects of Microbial Feed Additives on Growth Performance and Rumen Microflora of *Guyuan* Yellow Cattle
- 3768 Effects of Grazing and Barn Feeding on Growth Performance, Rumen Fermentation Parameters, Slaughter Performance and Meat Quality of *Datong* Yaks (*Bos grunniens*)
- 3777 Effects of Feeding Pattern on Rumen Tissue Structure and Rumen Bacterial Community Diversity and Composition of *Datong* Yaks (*Bos grunniens*)
- 3788 Effects of Starters with Different Processing Methods of Corn on Rumen Fermentation and Microflora of Pre-Weaning and Post-Weaning Lambs
- 3799 Effects of Feeding Methods on Growth Performance and Serum Biochemical Indices of Lambs during Weaning Stress Period
- 3814 Effects of Bulbil on Growth Performance, Nutrient Digestion and Metabolism, Serum Biochemical Indices and Immune Function of Sheep
- 3824 Effects of Walnut Green Husk Extract on Ruminant Fermentation of Sheep with Subacute Ruminant Acidosis
- 3835 Effects of *Salicornia Europaea* L. Extract on Growth Performance and Serum Biochemical Indexes of Sheep
- ZHAO Luyuan, ZOU Chenhao, GUO Yanshan, CAO Jiu' ai, GE Chaoyue, LUO Xinyu, LIN Gang, LIU Bing, YU Dongyou  
HAO Jianzhong, LI Xingchen, CI Yang, YIN Hongji, YU Xiuchen, LI Wenli
- ZHAO Dongdong, LI Xing, WANG Zheng, SHI Zhaoguo, QIN Shizhen, SHAO Yuxin, SUN Xiaoshan, ZHANG Xiaoyue  
SUN Lingling, GAO Shengtao, MA Lu, SHEN Yifan, WEN Wan, BU Dengpan  
JI Zhongyuan, WU Tao, ZHU Honglong, QI Yunxia, YANG Yongxin, HAN Rongwei, CHENG Guanglong, ZHAO Xiaowei  
ZHANG Yihan, HE Liying, CHEN Yi, XIONG Benhai, WANG Hui, JIANG Linshu  
PENG Wenchao, HU Zhenzhen, LUO Lin, DENG Mengmeng, CAI Jie, LIU Jianxin, WANG Diming  
SUN Jianxiang, LI Zemin, FAN Kaili, ZHANG Xiao, CHENG Qiang, ZHANG Zhao, ZHANG Rui, JIA Li, SHI Jinping, WANG Ying, MA Yue, LEI Zhaomin  
GUO Taiqing, HE Shaoying, WANG Rongjiao, HE Shichun, DAI Sifan, WANG Zibei, WU Dongwang, YU Cui, ZHOU Jing, MAO Huaming, AN Qingcong  
DING Ziyue, XUE Bai, CAI Lingyun, REN Yifan, WANG Zhisheng, WANG Lizhi, PENG Quanhui, HU Rui, ZOU Huawei  
GAO Xuhong, ZHANG Junli, YUE Caijuan, LIANG Xiaojun
- ZHANG Zhuandi, ZHANG Qiaoe, WANG Qing, LI Yue, LI Yunhe
- XUE Shuaishuai, LI Yafei, LI Keyao, LIU Haoyu, HUANG Caiyun, GUO Pingting, FANG Shaoming, LIANG Xuewu, CHI Chunmei, GAN Qianfu  
LI Maolong, XIE Jianliang, CHANG Juan, WANG Ping, LIU Chaoqi, WANG Lijun, YIN Qingqiang, DANG Xiaowei  
YAO Xixi, WANG Wei, XU Chengti, LIU Haodong, CHEN Yonglong
- YAO Xixi, WANG Wei, XU Chengti, ZHANG Ruiqiang, CHEN Yonglong, NIU Yong, ZHOU Shuangfu  
LI Yong, CAI Xiaofang, ZHANG Chengxin, LIU Peng, LI Cailian, GUO Yanli
- SHI Chendi, ZHAO Xiaoya, TIAN Peizhi, CHEN Jiabin, DUAN Chunhui, ZHANG Yingjie, LIU Yueqin, JI Shoukun, YAN Hui  
LIANG Bencong, YANG Gaiqing, WANG Fuzhou, LIAN Hongxia, WANG Linfeng, FU Tong, ZHANG Liyang, REN Hong, ZHANG Lijie, XU Xinying, LIU Xinhe, GAO Tengyun  
CHEN Wei, CHEN Binglong, YANG Donglin, ZHANG Xiao, CHEN Yong  
LIANG Jiandi, ABU SHIMAN MUBARAK, QIN Rongyan, CHEN Xiangyu, ZHAO Chen, WANG Lele, ZHANG Zhijun, WANG Chengmin, WANG Wenqi

- 3847 Effects of Dietary *Acremonium Terricola* Culture Supplemental Level on Growth Performance and Serum Biochemical, Immune and Antioxidant Indexes of Goats
- 3857 Effects of Chestnut Tannin on Growth Performance, Meat Quality and Muscle Fatty Acid Composition of *Tan* Sheep
- 3867 Effects of Feeding a High Proportion of Cottonseed Husk Diet on Ruminant Behavior, Rumen Fermentation Parameters and Nutrient Apparent Digestibility of *Duolang* Sheep
- 3875 Effects of Compound Bacteria Preparation and Compound Enzyme Preparation on Fermentation Quality and Aerobic Stability of *Caragana korshinskii* Silage
- 3884 Effects of Fish Meal Replacement by Enzymatic Hydrolyzed Soybean Protein Isolate on Growth Performance, Serum Biochemical Indices and Lipid Metabolism of Spotted Seabass (*Lateolabrax maculatus*)
- 3896 Effects of "Glucose Oxidase+Catalase+Citric Acid" Combined Additives on Performance, Immune Indexes and Nutrient Apparent Digestibility of Commercial Meat Rabbits
- 3906 Effects of Carvacrol on Intestinal Morphology, Gastrointestinal pH, Cecal Fermentation and Microflora of Meat Rabbits
- 3918 Effects of Dietary Arginine on Physiological Function of *Apis mellifera ligustica* Worker Bee Larvae
- 3930 Effects of *eutR* and *eutB* Gene Knockout on Growth and Reproduction and Biofilm Formation in Enterotoxigenic *Escherichia coli*
- 3940 Effects of *Sophora alopecuroides* L. on c-Jun N-Terminal Kinase/p38 Mitogen-Activated Protein Kinase Signaling Pathway and Tight Junction Protein Expression in Rumen Epithelium of Fattening Lambs Fed High Concentrate Diet
- 3953 Effects of Propyl-Inulin Nanoparticles as Prebiotics on Antibacterial Properties of *Lactobacillus plantarum*
- 3962 Yeast Culture Promotes Stem Cell Proliferation and Differentiation and Improves Intestinal Epithelial Integrity of Mice
- 3972 Mechanism of Quercetin on Mice Mastitis Model Based on Tumor Necrosis Factor Signaling Pathway
- 3983 Effects of Hyodeoxycholic Acid on Growth Performance, Energy Metabolism and Fat Digestion and Absorption of Mice
- 3991 Protective Effects of Sodium Humate on Intestinal Damage in Mice Infected with Enterotoxigenic *Escherichia coli* K88
- 4003 Alleviation Effects of Triglyceride on Intestinal Injury of Mice Induced by Enterotoxigenic *Escherichia coli* K88
- 4013 Effects of Chronic Cold Exposure on Thermogenesis, Liver Structure and Lipid Metabolism Related Protein Expression in Mice
- 4020 Effects and Mechanism of Duck Oil Diglyceride on Weight Loss and Lipid Reduction of Obese Rats
- 4032 Protective Effects of Ethoxyquin on Lipopolysaccharide and D-Galactosamine Induced Acute Liver Injury of Mice
- 4041 Effects of Solid-State Fermentation with Compound Strains on Nutritional Value of Soybean Hulls
- 4050 Isolation, Identification of a Strain of Lactic Acid Bacteria with Gossypol Removing Effect and Its Fermentation and Detoxification of Cottonseed Meal
- 4060 Isolation and Identification of *Lactobacillus* and Their Effects on Fermentation Quality of *Pennisetum sinense* Silage
- 4071 Effects of Mixed Silage of *Pennisetum sinense* Roxb and *Moutai* Distiller's Grains on Its Nutrient Contents, Fermentation Quality and Microbial Diversity
- WANG Xiaoyan, LIU Wuling, SUN Qingping, CHEN Dong
- QI Mingjiang, WEN Hongrui, ZHOU Yuxiang, SHI Wei, WANG Lyuye, HAN Liping, WU Guangyu  
CUI Haoran, BAI Tiantian, ZHAO Linbo, CHEN Yanxu, GUO Xuefeng, JIN Wei
- LI Shengnan, ZHANG Huan, DONG Chenfei, LEI Xiaoqing, ZHANG Guijie
- CAO Shi, YANG Linkun, LU Kangle, ZHANG Chunxiao, WANG Ling, LI Xueshan, SONG Kai
- ZHAN Haijie, LI Yanping, CAO Liang, DANG Wenqing, FAN Aifang, REN Keliang
- LIU Fuxin, LAI Ningjie, YU Zhikai, CAI Yuheng, SUN Lei, LIU Yajuan, CHEN Saijuan, CHEN Baojiang  
SUN Guiyun, HU Xiyi, YU Jing, WANG Hongfang, LIU Zhenguo, XU Baohua  
LU Xi, WU Dingyan, REN Ke, ZHU Zhenbao, QIAN Weisheng  
LI Shufang, MA Tian, YANG Jinli, AN Yawen, ZHANG Yu, YANG Xiaodong, WANG Hairong
- LIU Xiyu, DU Lixin, WAN Ruhui, ZOU Xue, ZHANG Jianbin, PU Lei, MA Jifei, HU Debao, HONG Liang  
ZHANG Dexiang, ZHU Chao, ZHOU Jiayi, WANG Xiuqi  
WANG Tao, CAO Lu, MI Xiaoyu, LYU Chen, ZHAO Xingxu, ZHANG Yong  
SONG Min, MA Xianyong, ZHANG Fenglin, WANG Chaopu, SU Han, JIANG Qingyan, WANG Songbo  
WANG Dong, HE Yanjun, LIU Kexin, DENG Shouxiang, HUANG Siqi, LIU Yun  
PANG Lili, ZHU Rongsheng, WANG Huaizhong, WANG Jiancai, QI Jing, HUANG Baohua, HU Hongmei  
ZHOU Wanhui, HU Yajie, ZHANG Meng, LI Xiaoshuang, XU Bin, YANG Yuying, LI Peng, LI Shize  
SUN Yu, WANG Baowei, ZHANG Ming'ai, YANG Xun, YIN Peipei, FAN Wenlei, KONG Min  
LI Peixuan, WU Zhikai, SUN Youpeng, FU Yiwu, WANG Xia, WANG Jingjing, ZHOU Ershun, YANG Zhengtao  
LI Yingying, DING Liren, ZHU Pinghua, CAO Xinhua, LI Qi, LI Yan, ZHU Chongmiao, HANG Suqin  
ZHANG Chen, MA Jiwen, WANG Yili, LI Xi, ZHU Xin, CHENG Maoji, CHEN Lijuan  
XIE Tingxia, CAO Xuedi, TAN Yulan, LI Guo, JIN Lei, LIU Shuliang, AO Xiaolin, ZHAO Ke, ZOU Likou  
LI Maoya, CHENG Qiming, LI Ping, FAN Xueying, CHEN Yulian, LONG Jianhua, CHEN Chao