



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.25 No.11  
2013

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

# 动物营养学报

中文核心期刊 中国科技核心期刊  
中国科协精品科技期刊工程项目期刊  
英国 CAB Abstracts 收录期刊

中国科学引文数据库(CSCD)核心库来源期刊  
中国科学评价研究中心权威期刊(A<sup>+</sup>级期刊)  
美国 Chemical Abstracts 收录期刊

第 25 卷 第 11 期 2013 年 11 月

## 目 次

### 综述

2509 哺乳动物雷帕霉素靶蛋白对仔猪蛋白质沉积的调控

张柏林 张林 于长宁 林猛

高峰 周光宏

2515 小麦阿拉伯木聚糖的益生功能

王清华 贺永惠

2520 食欲素调控机体糖代谢

王进宝 王建林 邵宝平

2529 植物多酚的抗氧化能力及其在动物生产中的应用

李昊阳 夏继桥 杨连玉

2535 布拉酵母菌制剂的研究进展

李春慧 吴润 钟荣珍

### 禽营养

2542 饲喂水平与光照周期对育成蛋鸡生长、营养物质消化率及肝脏瘦素受体基因表达的影响

陈辉 葛帅 邱科前 黄仁录

2550 肉种鸡产蛋后期能量限饲对子代生长性能、血清生化指标和抗氧化能力的影响

张艳云 李金锋 姜丹 张婧

2559 肉种母鸡能量限饲对产蛋后期胚胎蛋黄及组织中脂类代谢相关指标的影响

牟韶阳 徐良梅 李仲玉 张艳云

2567 孵化期注射叶酸对肉仔鸡生产性能及免疫功能的影响

姜丹 李金锋 张婧

2576 鲁西斗鸡饲粮适宜能量水平及生长规律

李春雷 徐良梅 孙进华

2583 1~12 周龄鲁西斗鸡粗蛋白质沉积及需要量

支丽慧 李世召 杨小军 姚军虎

2591 L-肉碱和赖氨酸对爱拔益加肉公鸡生长性能和肉品质的影响

窦文洁 姜淑贞 张相伦

2601 饲粮代谢能和粗蛋白质水平对 21~34 周龄海兰灰蛋鸡生产性能与蛋品质的影响

张桂国 杨在宾 陈冠军

### 反刍动物营养

2612 亚急性瘤胃酸中毒对瘤胃和瓣胃上皮细胞增殖与凋亡的影响

高翔

2623 饲料中大豆油替代鱼油对大西洋鲑肝细胞脂肪酸代谢的影响

杨维仁

2633 饲料中的玉米蛋白质对军曹鱼幼鱼蛋白质生长的贡献率

高翔

周继术 TORSTENSEN Bente E-lisabeth STUBHAUG Ingunn

吉红 周晖 陈刚 古滨河 董晓慧

邬宇航 殷兆丽 刘大程 胡红莲

高民 刘国娟

周继术 TORSTENSEN Bente E-lisabeth STUBHAUG Ingunn

吉红 周晖 陈刚 古滨河 董晓慧

### 协 办 单 位

(2013 年度, 排名不分先后)

动物营养学国家重点实验室

国家奶牛产业技术体系

上海美农生物科技股份有限公司

武汉新华扬生物股份有限公司

肇庆市华芬饲料酶有限公司

## 分子营养

2643 shRNA 对大鼠心肌细胞牛磺酸转运体的抑制作用

杨群辉 杨建成 刘梅 吴高峰  
冯颖 胡建民

## 饲料营养

2649 包被及不同水平木聚糖酶对肉鸡生长性能、免疫器官及消化器官发育的影响

吕秋凤 文宗雪 王聪 张民  
张恒杰 刘国华  
王红卫 孙敏敏 孟晓 王纪亭  
万文菊

2660 不同分子质量壳寡糖对蛋鸡生产性能、肠道微生物及脾脏白细胞介素-2 和肿瘤坏死因子- $\alpha$  基因表达的影响

朱宪章 刘路路 王志祥 黄艳群  
王现勇 蒋燕燕 陈文

2668 发酵饲料对朗德鹅生长性能、产肝性能、肠道黏膜结构及组织器官ATP 酶活性的影响

香艳 杨华明 张国梁 班志彬  
魏炳栋 赵玉民

2675 莫能菌素和吐温 80 对生长期草原红牛瘤胃发酵特性及甲烷排放的影响

李欣新 张永根 张微微 张宁  
刘凯玉 李春雷 姚庆 王艳菲

2682 玉米浆与干稻秸以不同比例混合对黄贮饲料发酵品质和营养成分的影响

杨桂芹 郭东新 李闯 孙亮  
田河 李建涛

2689 稻草和豆秸在肉兔上的表观消化能和营养物质表观消化率的评定

牛化欣 雷霁霖 常杰 贾玉东

2696 冰鲜野杂鱼和商品饲料对大菱鲆生长、脂质代谢及抗氧化功能的影响

高淳仁

## 研究简报

2705 不同来源植酸酶对猪生长性能、营养物质表观消化率及肠道微生物区系的影响

梁陈冲 陈宝江 于会民 张君  
陈娴

2713 玉米干酒糟及其可溶物对 21 日龄肉鸡生长性能、抗氧化能力和免疫性能的影响

李华磊 王娟娟 刘少凯 张静  
孙彤彤 闵育娜 刘福柱

2720 饲料砷污染对蛋鸡生产性能、蛋品质及抗氧化性能的影响

蒋媛婧 袁超 宋华慧 邹晓庭

2727 大豆黄酮在蛋鸡饲粮中的安全性评价:体内沉积

常玲玲 顾欢 童海兵 邹剑敏

施寿荣

2734 牦牛、犏牛和黄牛生产性能、肉营养品质及风味物质的比较

付永 魏雅萍 孟茹

2741 康奈尔净碳水化合物和蛋白质体系定义的 C 组分的小肠可消化性

崔英才 林雪彦 苏鹏程 王中华

2748 不同水平广藿香精油对锦江黄牛瘤胃体外发酵指标及养分降解率的影响

徐振松 瞿明仁 宋小珍 易中华  
黄涛 曹瀚燕

2755 紫茎泽兰提取物的除粪臭和驱避蚊蝇效果及对水牛血液生化指标的影响

李婉 杨承剑 梁辛 梁贤威  
梁明振 韦升菊 李舒露 邹彩霞

刘超逊

2763 干酒糟及其可溶物和豆粕混合饲料蛋白质二级结构与瘤胃降解特性的关系

吴鹏华 刘大森 全泳 徐杨  
郑立鑫

2770 蒲公英粗多糖对断奶至 3 月龄生长肉兔生长性能及免疫功能的影响

杨锐 李金良 李旭廷 曾富强  
李思聪 张翔宇 王吴燕

2775 丁酸钠对湘云鲫蛋白质代谢及其相关基因表达的影响

孙浪 刘臻 郝光 王赏初

周玲 冯军厂 于喆 鲁双庆

# CHINESE JOURNAL OF ANIMAL NUTRITION

Chinese Core Journals

Abstracted in CAB Abstracts and Chemical Abstracts

Volume 25 Number 11 November 2013

## CONTENTS

### REVIEW

2509 Regulation of Protein Deposition by Mammalian Target of Rapamycin in Piglets

ZHANG Bolin, ZHANG Lin, YU Changning, LIN Meng, GAO Feng, ZHOU Guanghong  
WANG Qinghua, HE Yonghui  
WANG Jinbao, WANG Jianlin, SHAO Baoping  
LI Haoyang, XIA Jiqiao, YANG Lianyu, ZHONG Rongzhen  
LI Chunhui, WU Run, PU Wanxia

2515 Prebiotic Functions of Wheat Arabinoxylan

2520 Orexin: Regulation in Body Glucose Metabolism

2529 Plant Polyphenols: Antioxidant Capacity and Application in Animal Production

2535 *Saccharomyces boulardii* Preparation: A Review

### POULTRY NUTRITION

2542 Effects of Feeding Level and Photoperiod on Growth, Nutrient Digestibility and Liver Leptin Receptor Gene Expression of Growing Layers

CHEN Hui, GE Shuai, DI Keqian, HUANG Renlu

2550 Effects of Dietary Energy Restriction in Broiler Breeders during the Late Laying Period on Growth Performance, Serum Biochemical Parameters and Antioxidant Capacity of Their Offspring

ZHANG Yanyun, LI Jinfeng, JIANG Dan, ZHANG Jing, MOU Shaoyang, XU Liangmei, LI Zhongyu  
JIANG Dan, LI Jinfeng, ZHANG Yanyun, ZHANG Jing, LI Chunlei, XU Liangmei, SUN Jinhua

2559 Effects of Energy Restriction on Indexes Related Lipid Metabolism in Embryonic Yolk and Tissues during the Late Laying Period in Broiler Breeders

ZHI Lihui, LI Shizhao, YANG Xiaojun, YAO Junhu

2567 Injecting Folic Acid during Incubation Period: Effects on Performance and Immune Function of Broilers

DOU Wenjie, JIANG Shuzhen, ZHANG Xianglun, YANG Weiren, ZHANG Guiguo, YANG Zaibin, CHEN Guanjun, GAO Xiang

2576 Suitable Energy Level and Growth Rule of *Luxi* Game Chickens

ZHANG Xianglun, JIANG Shuzhen, YANG Zaibin, YANG Weiren, ZHANG Guiguo, DOU Wenjie, CHEN Guanjun, GAO Xiang

2583 Crude Protein Deposition and Requirement of *Luxi* Game Chickens Aged 1 to 12 Weeks

WANG Yuechao, CAI Huiyi, YAN Haijie, LIU Guohua, ZHANG Shu, CHEN Guilan

2591 Effects of Dietary L-Carnitine and Lysine on Growth Performance and Meat Quality of Arbor Acres Male Broilers

FU Shengyong, WU Shugeng, ZHANG Haijun, YUE Hongyuan, DONG Yan, QI Guanghai

2601 Effects of Dietary Metabolizable Energy and Crude Protein Levels on Performance and Egg Quality of Hy-Line Laying Hens Aged 21 to 34 Weeks

WU Yuhang, YING Zhaoli, LIU Dacheng, HU Honglian, GAO Min, LIU Guojuan

### RUMINANT NUTRITION

2612 Effects of Subacute Rumen Acidosis on Proliferation and Apoptosis of Rumen and Omasum Epithelial Cells

ZHOU Jishu, TORSTENSEN Bente Elisabeth, STUBHAUG Ingunn, JI Hong ZHOU Hui, CHEN Gang, GU Binhe, DONG Xiaohui

### AQUACULTURE NUTRITION

2623 Effects of Replacing Dietary Fish Oil with Soybean Oil on Fatty Acid Metabolism in Hepatocytes of Atlantic Salmon (*Salmo salar* L.)

National Dairy Industry and Technology System

2633 Contribution Rate of Dietary Corn Protein to Protein Growth of Juvenile Cobia (*Rachycentron canadum* L.)

Sunhy Biology Co., Ltd. Wuhan Co., Ltd.

Huafen Feed Enzymes (Zhaoqing)

### SUPPORTED FROM

(2013, in no particular order)

State Key Laboratory of Animal Nutrition

Shanghai Menon Animal Nutrition Technology Co., Ltd.

## MOLECULAR NUTRITION

- 2643 Inhibitory Effects of shRNA on Taurine Transporter of Rats Cardiac Myoblasts

YANG Qunhui, YANG Jiancheng,  
LIU Mei, WU Gaofeng, FENG  
Ying, HU Jianmin

## FEED SCIENCE AND TECHNOLOGY

- 2649 Coated and Different Levels of Xylanase: Effects on Growth Performance, Immune and Digestive Organ Development of Broilers

LYU Qiufeng, WEN Zongxue,  
WANG Cong, ZHANG Min,  
ZHANG Hengjie, LIU Guohua  
WANG Hongwei, SUN Minmin,  
MENG Xiao, WANG Jiting, WAN  
Wenju

- 2660 Effects of Different Molecular Masses of Chito-Oligosaccharides on Performance, Intestinal Microorganism and *IL-2* and *TNF- $\alpha$*  Gene Expressions in Spleen of Laying Hens

- 2668 Effects of Fermented Feed on Growth Performance, Fatty Liver Performance, Intestinal Mucosa Structure and Organ Tissue ATPase Activity of Landaise Geese

- 2675 Effects of Monensin and Tween-80 on Rumen Fermentation and Methane Emission of Growing Grassland Red Bulls

- 2682 Effects of Mixing Corn Steep Liquor with Dry Rice Straw in Different Proportions on Fermentation Quality and Nutrient Composition of Yellow Rice Straw Silage Feed

- 2689 Evaluation of Apparent Digestible Energy and Nutrient Apparent Digestibility in Rice Straw and Soybean Straw of Meat Rabbits

- 2696 Effects of Fresh Frozen Trash Fish and Commercial Feeds on Growth, Lipid Metabolism and Antioxidant Function of Turbot (*Scophthalmus maximus* L.)

## SHORT COMMUNICATIONS

- 2705 Effects of Different Sources of Phytase on Growth Performance, Apparent Digestibility of Nutrients and Intestinal Microflora of Pigs

LIANG Chenchong, CHEN Bao-  
jiang, YU Huimin, ZHANG Jun,  
CHEN Xian

- 2713 Effects of Corn Distillers Dried Grains with Solubles on Growth Performance, Antioxidant Capacity and Immunity of Broilers at 21 Days of Age

- 2720 Arsenic Contamination in Feed Affects Performance, Egg Quality and Antioxidant Capacity of Laying Hens

- 2727 Safety of Daidzein as a Feed Additive in Laying Hens: Deposition *in Vivo*

- 2734 A Comparison on Performance, and Nutritional Quality and Flavor Compounds in Beef of Yaks, Cattle-yaks and Cattle

- 2741 Small Intestine Degradability of C Component Defined by Cornell Net Carbohydrate and Protein System

- 2748 Effects of Different Levels of *Pogostemon cablin* Essential Oil on *in Vitro* Rumen Fermentation Indices and Nutrient Degradability of *Jinjiang* Yellow Cattle

- 2755 Effects of Different *Eupatorium adenophorum* Spreng Extract Levels on Deodorization, Flies Repellent of Dung and Blood Biochemical Indices in Buffaloes

- 2763 Relationship between Protein Secondary Structure and Rumen Degradation Characteristics of Mixed Feeds of Distillers Dried Grains with Solubles Combined with Soybean Meal

- 2770 Effects of *Taraxacum* Polysaccharides on Growth Performance and Immune Function of Growing Meat Rabbits from Weaner to 3 Months of Age

- 2775 Effects of Sodium Butyrate on Protein Metabolism and Its Related Gene Expression of Triploid Crucian Carp (*Carassius auratus tripl*)