

CONTENTS

ANIMAL WELL-BEING AND BEHAVIOR

- The effects of long (C20/22) and short (C18) chain omega-3 fatty acids on keel bone fractures, bone biomechanics, behavior, and egg production in free-range laying hens
M. J. Toscano, F. Booth, L. J. Wilkins, N. C. Avery, S. B. Brown, G. Richards, and J. F. Tarlton.....823
- The effect of new monochromatic light regimes on egg production and expression of the circadian gene *BMAL1* in pigeons
Y. Wang, J. T. Ding, H. M. Yang, W. Cao, and Y. B. Li.....836
- Vitamin C prevents the effects of high rearing temperatures on the quality of broiler thigh meat
I. B. Ferreira, J. B. Matos Junior, S. Sgavioli, T. I. Vicentini, V. S. Morita, and I. C. Boleli.....841
- The effects of environmental enrichment and beak-trimming during the rearing period on subsequent feather damage due to feather-pecking in laying hens
K. M. Hartcher, K. T. N. Tran, S. J. Wilkinson, P. H. Hemsworth, P. C. Thomson, and G. M. Cronin.....852
- Effect of partial comb and wattle trim on pullet behavior and thermoregulation
P. Y. Hester, D. S. AL-Ramamneh, M. M. Makagon, and H. W. Cheng.....860
- Antibiotic resistance profiles among mesophilic aerobic bacteria in Nigerian chicken litter and associated antibiotic resistance genes
Olayeni Stephen Olonitola, Nicole Fahrenfeld, and Amy Pruden.....867

GENETICS AND GENOMICS

- Genetic relations between natural antibodies binding keyhole limpet hemocyanin and production traits in a purebred layer chicken line
S. A. S. van der Klein, T. V. L. Berghof, J. A. J. Arts, H. K. Parmentier, J. J. van der Poel, and H. Bovenhuis.....875
- Genetic analysis of bone quality traits and growth in a random mating broiler population
F. González-Cerón, R. Rekaya, and S. E. Aggrey.....883

IMMUNOLOGY, HEALTH, AND DISEASE

- Atypical velogenic Newcastle disease in a commercial layer flock in Japan
Dennis V. Umali, Hiroshi Ito, Kazutoshi Shiota, Toshihiro Ito, and Hiromitsu Katoh.....890
- Use of yeast cell wall extract as a tool to reduce the impact of necrotic enteritis in broilers
Shawkat A. M'Sadeq, Shu-Biao Wu, Mingan Choct, Rebecca Forder, and Robert A. Swick.....898
- Histopathological and morphometric changes induced by a dextran sodium sulfate (DSS) model in broilers
A. Menconi, X. Hernandez-Velasco, E. A. Vicuña, V. A. Kuttappan, O. B. Faulkner, G. Tellez, B. M. Hargis, and L. R. Bielke.....906
- Effects of different vaccine combinations against *Mycoplasma gallisepticum* on the internal egg and eggshell characteristics of commercial layer chickens
R. Jacob, S. L. Branton, J. D. Evans, S. A. Leigh, and E. D. Peebles.....912
- Efficacy of a novel prebiotic and a commercial probiotic in reducing mortality and production losses due to cold stress and *Escherichia coli* challenge of broiler chicks
G. R. Huff, W. E. Huff, N. C. Rath, F. A. El-Gohary, Z. Y. Zhou, and S. Shini.....918
- Antioxidative effect of ginseng stem-leaf saponins on oxidative stress induced by cyclophosphamide in chickens
J. Yu, Y. Chen, L. Zhai, L. Zhang, Y. Xu, S. Wang, and S. Hu.....927

Efficacy of beer fermentation residue containing <i>Saccharomyces cerevisiae</i> cells for ameliorating aflatoxicosis in broilers F. Bovo, L. T. Franco, E. Kobashigawa, G. E. Rottinghaus, D. R. Ledoux, and C. A. F. Oliveira	934
Restoration of sensitivity to salinomycin in <i>Eimeria</i> following 5 flocks of broiler chickens reared in floor-pens using drug programs and vaccination to control coccidiosis H. D. Chapman and T. K. Jeffers	943
Isolation of chicken astrovirus from specific pathogen-free chicken embryonated eggs Luis Fabian N. Nuñez, Silvana H. Santander Parra, Elena Mettifogo, Márcia Helena B. Catroxo, Claudete S. Astolfi-Ferreira, and Antonio J. Piantino Ferreira	947

METABOLISM AND NUTRITION

The effect of phytase and fructooligosaccharide supplementation on growth performance, bone quality, and phosphorus utilization in broiler chickens Y. Shang, A. Rogiewicz, R. Patterson, B. A. Slominski, and W. K. Kim.....	955
Comparative study of DL-selenomethionine vs sodium selenite and seleno-yeast on antioxidant activity and selenium status in laying hens C. L. Jing, X. F. Dong, Z. M. Wang, S. Liu, and J. M. Tong	965
Vitamin E and selenium in broiler breeder diets: Effect on live performance, hatching process, and chick quality U. R. A. Urso, F. Dahlke, A. Maiorka, I. J. M. Bueno, A. F. Schneider, D. Surek, and C. Rocha.....	976
Nutritional evaluation of canola meals produced from new varieties of canola seeds for poultry X. Chen, C. Parr, P. Utterback, and C. M. Parsons	984
Standardized ileal amino acid digestibility of expeller-extracted canola meal subjected to different processing conditions for starter and grower broiler chickens M. Toghyani, N. Rodgers, P. A. Iji, and R. A. Swick.....	992
Evaluation of the pepsin digestibility assay for predicting amino acid digestibility of meat and bone meals T. M. Davis, C. M. Parsons, P. L. Utterback, and D. Kirstein.....	1003
Modulation of small intestinal phosphate transporter by dietary supplements of mineral phosphorus and phytase in broilers Korinna Huber, Ellen Zeller, and Markus Rodehutschord.....	1009
Interactions between supplemented mineral phosphorus and phytase on phytate hydrolysis and inositol phosphates in the small intestine of broilers Ellen Zeller, Margit Schollenberger, Maren Witzig, Yauheni Shastak, Imke Kühn, Ludwig E. Hoelzle, and Markus Rodehutschord.....	1018
Effects of dietary protein levels during rearing and dietary energy levels during lay on body composition and reproduction in broiler breeder females R. A. van Emous, R. P. Kwakkel, M. M. van Krimpen, and W. H. Hendriks.....	1030

MOLECULAR AND CELLULAR BIOLOGY

L-arginine upregulates the gene expression of target of rapamycin signaling pathway and stimulates protein synthesis in chicken intestinal epithelial cells C. Yuan, Y. Ding, Qiang He, M. M. M. Azzam, J. J. Lu, and X. T. Zou	1043
Downregulation of basic fibroblast growth factor is associated with femoral head necrosis in broilers P. F. Li, Z. L. Zhou, C. Y. Shi, and J. F. Hou	1052

PHYSIOLOGY AND REPRODUCTION

Duck gait: Relationship to hip angle, bone ash, bone density, and morphology Cara I. Robison, Meredith Rice, Maja M. Makagon, and Darrin M. Karcher.....	1060
Effects of diet, time since defecation, and drying process of the droppings on corticosterone metabolite measurements in Japanese quail S. Pellegrini, J. M. Busso, A. Lèche, and R. H. Marin.....	1068

PROCESSING AND PRODUCTS

The fatty acid, amino acid, and mineral composition of Egyptian goose meat as affected by season, gender, and portion
Greta Geldenhuys, Louwrens C. Hoffman, and Nina Muller.....1075

An assessment of the impact of pulsed electric fields processing factors on oxidation, color, texture, and sensory attributes of turkey breast meat
Cristina Arroyo, Sara Eslami, Nigel P. Brunton, Joshua M. Arimi, Francesco Noci, and James G. Lyng..... 1088

MANAGEMENT AND PRODUCTION

Antioxidative activity of the polyphenols from the involucre of *Castanea mollissima* Blume and their mitigating effects on heat stress
S. Dong, H. Li, L. Gasco, Y. Xiong, K. J. Guo, and I. Zoccarato 1096