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## Department of Poultry Science

*College of Agricultural & Environmental Sciences*

**UNIVERSITY OF GEORGIA**

# UGA Poultry Nutrition Newsletter

July, 2023



## Upcoming Poultry Events

2023

- 7/31-8/2 [Chicken Marketing Summit, Miramar Beach, FL](#)
- 8/7 [Poultry Protein & Fat Seminar, Nashville, TN](#)
- 8/29-8/31 [Arkansas Nutrition Conference, Littler Rock, AR \(New Location\)](#)
- 9/12-9/14 [Liquid Feed Symposium, Louisville, KY](#)
- 9/25-9/27 [58th National Meeting on Poultry Health, Processing, and Live Production, Ocean City, MD](#)
- 9/25 [Layer Conference, Athens, GA](#)
- 9/27 [Broiler Conference, Athens, GA](#)
- 10/29-11/1 [Symposium on Gut Health in Production of Food Animals, St. Louis, MO](#)
- 11/6-11/8 [Poultry Tech Summit, Atlanta, GA](#)

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## Poultry News at a glance

- **June feed update: What did you miss? (All about Feed)**
  - The latest business developments and updates from around the world this month to ensure you don't miss a thing in the global animal feed industry.
- **Corn continues to push higher (Feedstuffs)**
  - Corn futures solid inroads as traders expressed some doubts that yield and production potential will be as high as USDA estimated. Wheat jumped 2.5% to 3% higher as the Black Sea shipping deal has not yet been extended. Meanwhile soybeans slide lower.
- **US animal protein producers to face new labeling standards (Feed Strategy)**
  - The USDA plans to revise its current industry guidelines to encourage meat and poultry producers to strengthen the substantiation of their product claims.
- **Wildfire smoke could have long-term effects on livestock (Feed Strategy)**
  - The from Canadian wildfires drifted into the northeastern U.S. including portions of the Corn Belt. Limited research has been done in how smoke impact on animal health, but wildfire smoke may also exacerbate the effects of other stressors, such as heat stress or illness.

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2023 JULY

In this issue, you will read research summaries from  
10 Broilers / 1 broiler breeder studies  
2 Layer / 1 Geese / 1 Quail study  
2 Literature reviews  
from 14 research institutes in 8 countries



# POULTRY NUTRITION RESEARCH SUMMARY



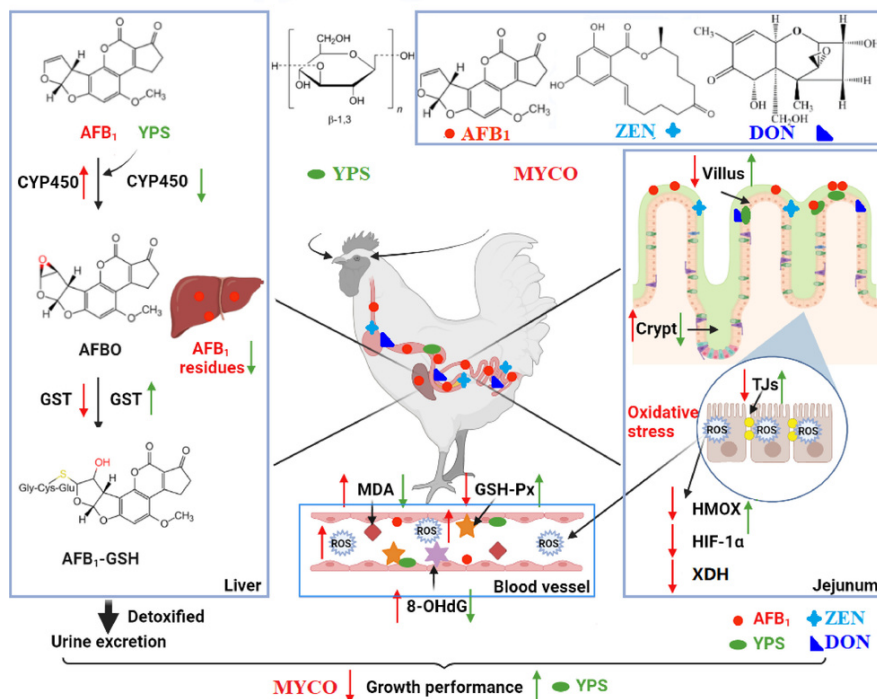
Chongxiao (Sean) Chen\*, Xixi Chen #, Catherine Fudge\*, Muhammad Ali\*, Nicolás Mejia-Abaunza\*, and Lily Xu #

\* Department of Poultry Science, University of Georgia

# Nutribins LLC

In broilers under *Salmonella Enteritidis* challenge, administering probiotics (*E. Coli Nissle 1917*) improved intestinal morphology and barrier function, while reducing spleen index, salmonella loads, and inflammation. Furthermore, cecum microbiota composition was altered and *E. Coli*, *Lactobacillales*, and *Lachnospiraceae* presence were enriched.

*Chinese Academy of Agricultural Sciences/Link*



In broilers, supplementation of **yeast polysaccharides** (1-2 g/kg) in diets contaminated with mixed mycotoxins reduced lesions in the small intestine and oxidative stress; yeast polysaccharides also improved BW, ADFI, and ADG.

*China Agricultural University/Link*

In broilers fed a Nitrogen-free diet, **an amylose : amylopectin (AM/AP) ratio of 0.60** improved maltase activity and mucin-2 expression in the intestines. Increasing AM/AP ratio is associated with decreased endogenous ileal amino acid losses.

*China Agriculture University/Link*

Fig. Dietary yeast polysaccharides ameliorated mixed mycotoxins-induced adverse effects in broilers via regulating intestinal oxidative stress, and hepatic metabolic enzymes.

In broilers under cyclic heat stress, supplementing *Lippia organoides* (Mexican Oregano) **essential oils** improved BW, BWG, and FI., while improving intestinal morphology in heat-stressed birds.

*University of Arkansas/Link*

In broilers, supplementing **Dialium guineense stem-bark** (DGSB) at 0.5 g/kg improved the growth performance, while inclusion levels at 1.0 and 2.0 g/kg worsened performance; changes in certain serum biochemical measurements were also observed.

*University of Technology (Nigeria)/Link*

In broilers, replacing limestone with **industrial egg residue** (IER) by 0, 35, 70, and 100% did not affect feed consumption, BW, FCR, blood calcium level, carcass yield, or breast and leg weight at 42 d. With an increasing level of IER, there was a linear reduction in abdominal fat.

*Santa Catarina State University /Link*



# POULTRY

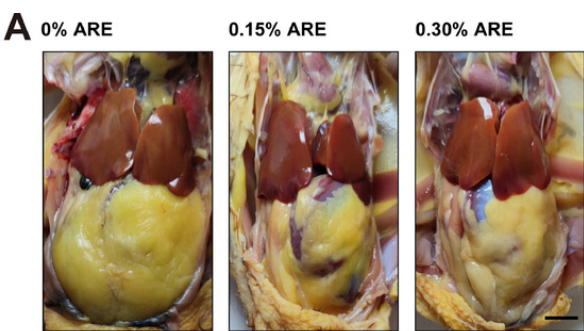
# LATEST NUTRITION RESEARCH AT A GLANCE

In broilers under heat stress, supplementing **inulin** at 1% increased the protein and iron content in the thigh and breast meat, while also improving the antioxidant capacity at d 42.

*IBNA, Romania* / [Link](#)

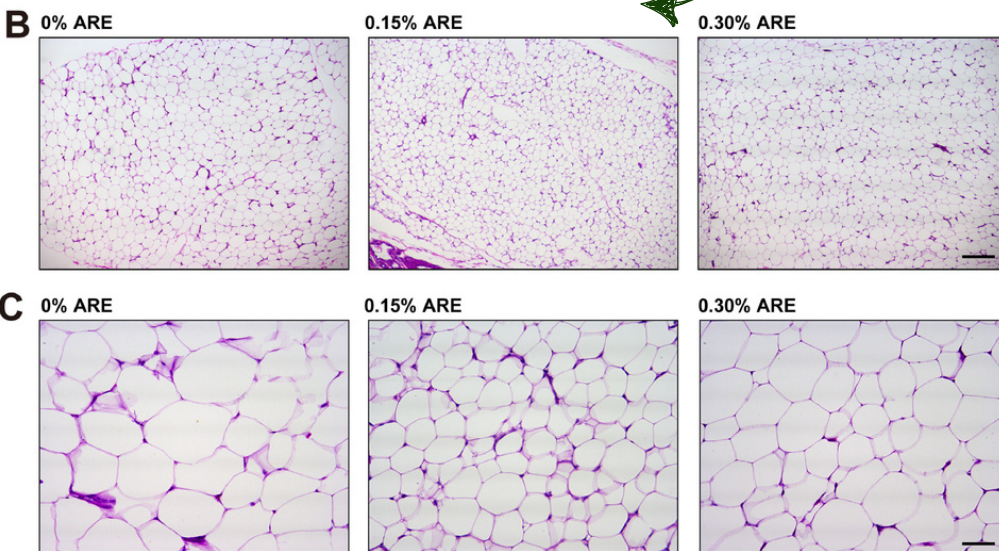
In yellow-feathered broilers, dietary supplementation of **Galla chinensis extract** (GCE) at 250 mg/kg increased the BW, ADC, and relative abundance of beneficial bacterial genera on d 60; while serum concentrations of malondialdehyde and interleukin-6 were decreased.

*Hunan Agricultural University* / [Link](#)



In broilers, supplementing **Anoectochilus roxburghii extract** (ARE) at 0.15% reduced d42 BW and body fat, but increased breast and thigh muscle yield. ARE also improved meat quality, increased antioxidant activities in the muscle/serum, and modified intestinal microbiota.

*Guangxi University* / [Link](#)



In laying hens under *clostridium perfringens* and coccidia infection, supplementing **Yucca schidigera extract** (500 mg/kg) improved intestinal morphology and antioxidant functions, and therefore enhanced egg qualities.

*Sichuan Agricultural University* / [Link](#)

Fig. Effects of dietary supplementation of ARE on fat deposition in broilers.

In brown laying hens, **reducing crude protein** levels in the diet (from 18% to 16% in the pullet phase, and from 14% to 12% in the laying phase) while maintaining equal amino acid concentrations led to an increased abdominal fat deposition without impacting BW during the pullet phase, but reduced egg weight in the laying phase. In both phases, lowering CP levels decreased overall nitrogen excretion.

*Konkuk University* / [Link](#)

In broiler breeder pullets (4-20 weeks), compared to a skip-a-day feeding program (SAD), birds under the **everyday feeding program** (ED) had higher bone density and body fat prior to photo-stimulation without impacting gastrointestinal development. Birds on the ED feeding program also required less feed while achieved a heavier BW.

*University of Georgia* / [Link](#)

In breeding geese during laying, **vitamin K3** supplementation (10 mg/kg) improved performance (feed intake, laying rate) and egg quality (egg weight, albumen height, shell thickness, and haugh unit); it also promoted antioxidant functions.

*Qingdao Agricultural University / [Link](#)*

In laying quails, reducing dietary methionine to 0.30% did not negatively affect growth parameters, egg production, or egg quality over the 10-week experimental period; supplementing **betaine** (0.20%) in the diet improved the antioxidant stability of eggs.

*Universidad de Salamanca / [Link](#)*

## Review#1

### Osteoimmunology: A Link between Gastrointestinal Diseases and Skeletal Health in Chickens

In poultry, the skeletal system has multiple functions, including structural integrity, assisting in locomotion/flight, maintaining mineral homeostasis, supplementing calcium for eggshell formation, and originating and residing immune cells in the bone marrow. Gastrointestinal diseases can affect bone health as well as the immune system. This review discusses the different mechanisms by which gastrointestinal diseases, especially coccidiosis and necrotic enteritis, can affect bone health and impact the immune system, and the potential strategies for the prevention/treatment of bone loss.

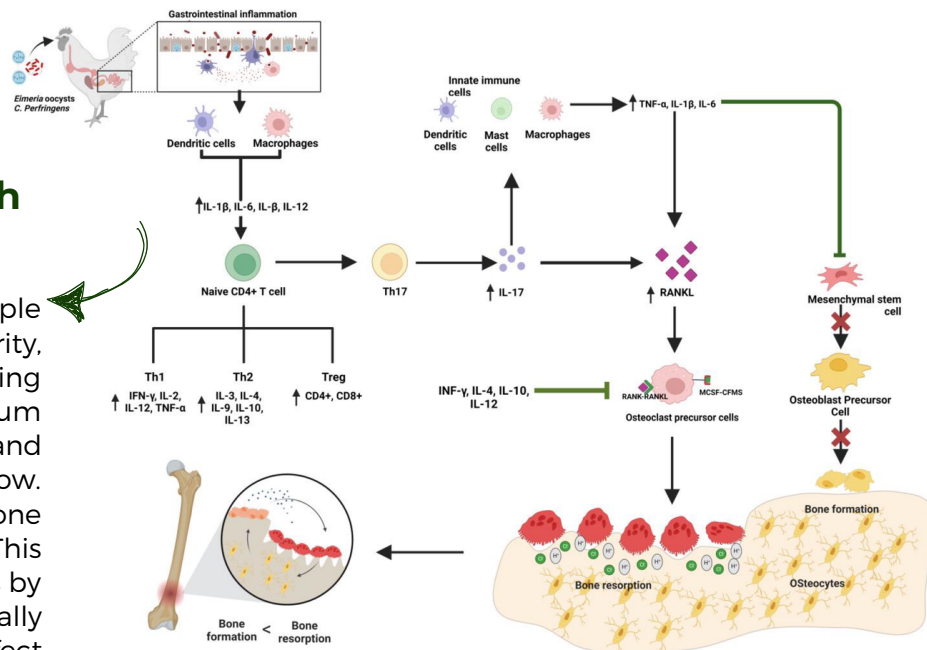


Fig. Schematic representation of the interaction between immune responses and bone biology following gastrointestinal disorder (coccidiosis and necrotic enteritis) in chickens.

*University of Georgia / [Link](#)*

## Review#2

### Lipid metabolism and body composition in long-term producing hens

Over the past 50 years, the lifespan and egg production of laying hens have increased. During this extended laying cycle, multiple organ functions of the hens need to work in coordination. The ovaries produce follicles, the liver provides nutrients (mainly lipids) to support the normal growth of follicles, and adipose tissue plays a role in maintaining the body's energy balance. Additionally, adipose tissue may be involved in the ovulation process through the production of adipocyte factors (hormones). Therefore, the body composition of laying hens may play a significant role in the sustainability of egg production. This review discusses the interactions between these metabolic processes and the impact of nutrition and hormones on the sustainability of egg production.

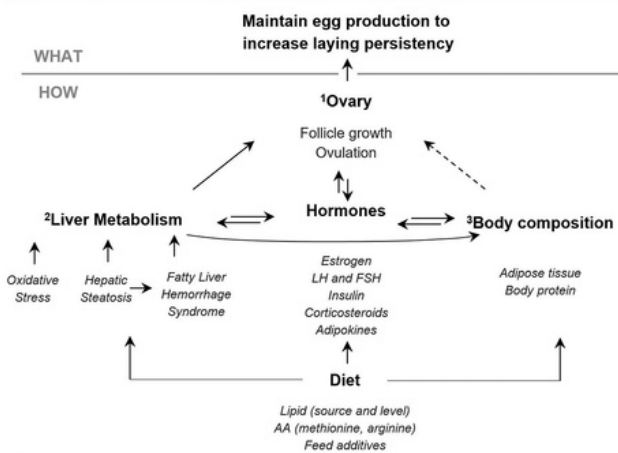


Fig. Proposed influencing factors on laying persistency

*Wageningen University / [Link](#)*