

2023 MARCH ISSUE

In this issue, you will read research summaries from

- 🐔 12 Broilers studies
- 🥚 6 Layer/Breeder studies
- 🦆 1 Duck study
- 📖 1 Literature review

from 17 research institutes in 5 countries

NUTRITION NEWSLETTER

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THE POULTRY NUTRITION NEWSLETTER IS BROUGHT TO YOU BY



Department of Poultry Science
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LATEST NUTRITION RESEARCH AT A GLANCE

POULTRY

In broilers challenged with coccidiosis, **100% Met** (L-Met or DL-Met) had better gut integrity and antioxidant status compared to the 80% Met groups; compared to DL-Met, L-Met improved growth in the starter phase and gut permeability in the challenge phase.

University of Georgia/[Link](#)

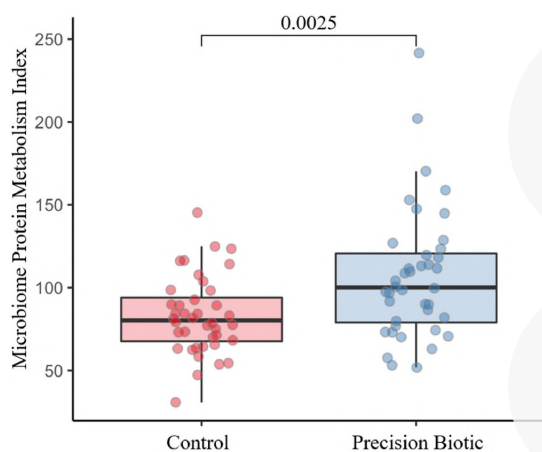


Fig. Microbiome Protein Metabolic Index

At a commercial broiler site (10 houses x 19,000 birds per house), a supplementation of **precision biotic** (900 g/MT) improved BW at d21 and improved FCR at d42, which may be partly through significantly altered cecal microbiome metabolisms on pathways related to protein fermentation and putrefaction.

DSM and New Hope Liuhe/[Link](#)

In male Ross 708 broilers, supplementing **inositol-stabilized arginine silicate** (a vasodilator ingredient) at 0.025, 0.10, or 0.15% was beneficial in reducing woody breast and/or white striping severity without diminishing growth or breast muscle yields.

Iowa State University/[Link](#)

In broilers, the Incidence of moderate to the severe woody breast was reduced in broilers fed a diet containing **a blend of vitamin C/L-arginine/choline** at 6 weeks of age. Adding a **vasodilator** (0.1% inclusion rate) to the diet improved woody breast scores by 11% at 7 weeks. The blend diet and vasodilator diet both improved FCR by over 2 points.

Iowa State University/[Link](#)

In broilers, supplementing a **protease** at 50 g/MT using matrix value could improve growth and profit margin.

University of Georgia/[Link](#)

In broilers vaccinated with coccidiosis, **dietary SID M+C requirement** for grower (11-21 d) was ranged from 0.8 to 1.0% for optimal growth performance and intestinal immunity, regardless of coccidiosis challenge.

Northwest A&F University/[Link](#)

In broilers, the **cecal ecosystem** is found to greatly contribute to meat quality, especially to intramuscular fat deposition.

China Agricultural University/[Link](#)

In broilers, **fine-grind SBM** (2.4mm) increased overall pellet quality but reduced the digestibility of threonine, arginine, and lysine compared to the coarse-grind (7.9 mm) SBM. Fine-grinded SBM also reduced feed efficiency compared to coarse and medium grind (5.6mm) SBM.

Pennsylvania State University/[Link](#)

In Cobb-500 broilers, feeding starter diets as **micro-pellets, coarse and fine crumbles** improved body weight and FCR due to increased feed intake at 21d compared to mash diets but resulted in less relative gizzard weight. There was a further improvement in body weight and FCR when fines were removed from crumble diets.

Kansas State University & Kwame Nkrumah University /[Link](#)

POULTRY

LATEST NUTRITION RESEARCH AT A GLANCE

In broilers, there was no incremental improvement in live performance and yield when birds were fed with different pellets to fines ratios (100:0, 75:25, 56:44, 42:58, 31:69, 0:100). However, broilers fed on **0:100% mill fines** (feed particles that passed through a 2,000 µm sieve) had lower live performance and yield than other treatments.

USDA-ARS / [Link](#)

In broilers, heat stress-induced oxidative stresses and reduced growth performance. Adding 1.5% **glutamine** to the diet could improve body weight gain, feed intake, and the expression of antioxidant enzymes in broilers. Its function may execute by increasing the Nrf2/p38 MAPK expression to improve the liver's response to oxidative stress.

Anhui Science and Technology University / [Link](#)

In Wenchang chickens under oxidative stress, **higher vitamin D3** level (4000 IU) alleviated oxidative-stress-induced growth impairment and intestinal injury.

Hainan University / [Link](#)

In Hyline Silver Brown laying hens that were 80+ weeks old, **AMEn requirements** were determined to be 1,209 kJ/day (or 11 Mj/kg to 12.5 MJ/kg). The SID Lysine was 610mg/day or less (or <6g/kg)

University of KwaZulu-Natal / [Link](#)

In laying hens at 47 or 67 weeks of age, supplementing 100 mg/kg **theabrownins** improved egg production, egg quality, and antioxidant capacity of the ovary; the effect was more pronounced in older layers.

Sichuan Agricultural University / [Link](#)

In Hy-Line brown layers (23-weeks), supplementing **fermented broussonetia papyrifera** improved intake, FCR and egg yolk color, but may cause a decline in eggshell quality at higher inclusion level; 1% is recommended.

Chinese Academy of Sciences / [Link](#)

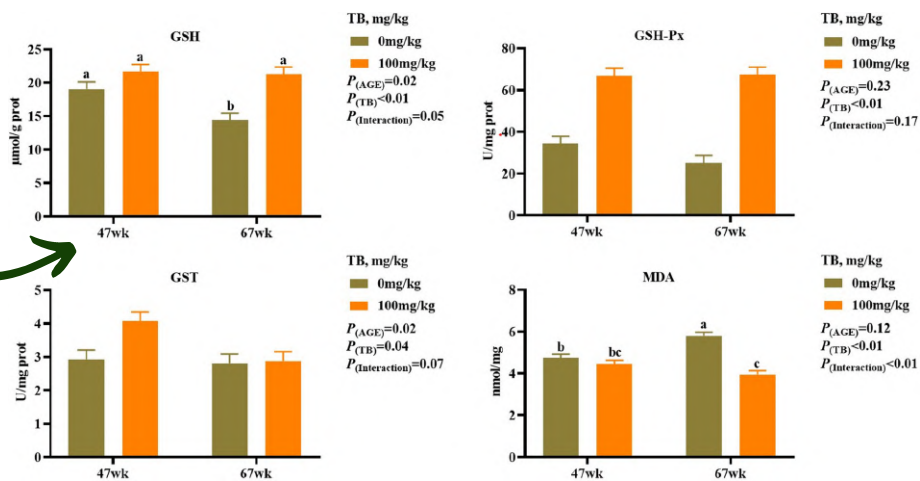


Fig. Effect of theabrownins on antioxidant capacity in ovary of laying hens with different ages.

In 66-week old Hy-Line brown hens, supplementing **genistein** at 120 mg/kg improved laying rate, eggshell quality, and antioxidant capacity.

Chinese Academy of Agriculture Science / [Link](#)

In cecectomized laying hens, **different soybean meal sources** had varied amino acid digestibility of 6-12% units for most amino acids; the range of MEn for the SBM samples was 7.5-10.5 MJ/kg DM.

University of Hohenheim / [Link](#)

LATEST NUTRITION RESEARCH AT A GLANCE

POULTRY

In aged laying hens (75 weeks old), supplementing **phytosterols** at 20 mg/kg improved egg quality, but had no effect on tibia quality.

Huazhong Agricultural University/Link

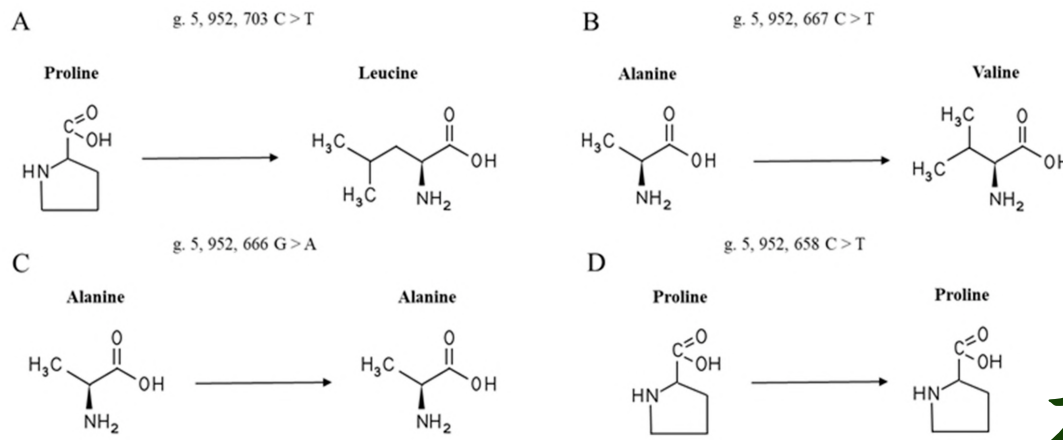


Fig. The change in the RXRA amino acid.

In ducks, the researcher found **retinoic acid X receptor alpha** (RXRA) promoted fat accumulation in duck preadipocytes and accelerated fat accumulation. The mutation site of RXRA was significantly related to duck feed efficiency.

Anhui Agricultural University/Link

Review

The Contribution of Phytate-Degrading Enzymes to Chicken-Meat Production

Our comprehension of the **phytate-phytase** axis in poultry nutrition has expanded over the past 30 years; this has promoted the extraordinary surge in acceptance of exogenous phytases, coupled with the development of more efficacious preparations in combination with the deflating inclusion costs for exogenous phytases. The purpose of this paper is to review the progress that has been made with phytate-degrading enzymes since their introduction in 1991 and the underlying mechanisms driving their positive contribution to chicken-meat production now and into the future.

University of Sydney / Link

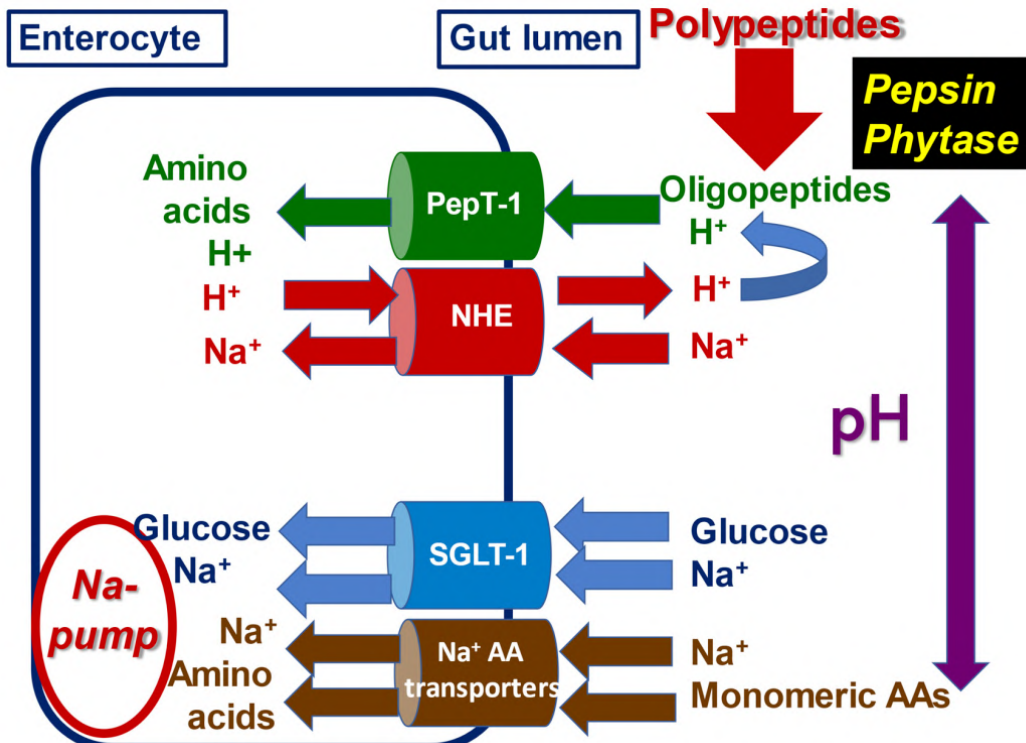


Fig. Schematic representation of intestinal uptakes of oligopeptides, glucose, sodium, and monomeric amino acids via four transport systems: PepT-1, NHE, SGLT-1, and Na⁺-dependent amino acid transporters.