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# POULTRY NUTRITION RESEARCH SUMMARY

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# LATEST NUTRITION RESEARCH AT A GLANCE

## POULTRY

In young broilers, **xylanase** supplementation 100 FXU/kg diet in wheat-soy-based diets with 13g/kg or 33.4g/kg NSPs. The enzymes can improve feed efficiency, cecal butyrate production, hepatic coenzyme Q10 concentration, nitrogen retention, dry matter retention, dietary energy (AMEn), and AME to gross energy ratio. Meanwhile, the different levels of NSPs did not impact nutrient digestibility and performance.

*Harper Adams University /[Link](#)*

In broilers, diets formulated at **17.5% and 15.6% crude protein** supplemented with amino acids to meet current standards adversely affected growth parameters. When inducing leaky gut, intestinal permeability increased in broilers fed 15.6% crude protein and had a reduction in microbial diversity in the ceca.

*South Australian Research and Development Institute/[Link](#)*



In broilers, **soybean particle size** did not significantly impact TMEn and AAs digestibility from the rooster assay. However, 1,174 and 1,577  $\mu\text{m}$  particle sizes improved growth performance parameters and increased gizzard weights than 466  $\mu\text{m}$  particle size.

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

In broilers, **muramidase** supplemented at 25,000 LSU(F)/kg in diets increased apparent ileal digestibility of amino acids, independent of the diet containing wheat or corn. Additionally, muramidase supplementation did not affect endogenous amino acids.

*DSM /[Link](#)*

In broilers, using up to 10% **rice bran** did not significantly affect overall growth, feed intake, FCR, production index, lipid profile, antioxidants, and immunological indices at age 35d; however, the dressing percentage was decreased.

*King Abdulaziz University /[Link](#)*

In broilers, **keratinase-treated feather meal** improved growth performance more than untreated ones. And both treated and untreated feather meal can be used up to 24% in feed without adverse impacts on growth of broilers.

*Federal University of Technology /[Link](#)*

In broiler, adding microbial **muramidase** in diets up to 600mg/kg showed no effect on growth performance. Still, there was an improvement in breast meat's n-3 and n-6 PUFA, immunological indices, and serum lipid profile.

*Zagazig University /[Link](#)*

In broilers, **corn from the United States, Argentina, and Brazil** was tested. The results showed corn origin can influence the FCR, breast meat weight, and mineral digestibility (phosphorus, calcium, and potassium), which might be related to the physical (e.g., stress cracks) and chemical characteristics of corn.

*Auburn University /[Link](#)*



In broilers fed **cassava meal-based diet** (~50%), conditioned at 60 °C or steam conditioning exhibited better FCR than those fed diets conditioned at 90 °C or puffing conditioned diets. Additionally, the starch digestibility and AME were higher for broilers fed steam conditioned diets than those fed mechanical conditioned diets. It suggested cassava meal-based broiler diets could be conditioned at lower temperatures and combined with puffing or steam conditioning.

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

In broilers fed newly harvested corn, supplementing **protease** (12,000 U/kg), glucoamylase (60,000 U/kg), or *Pediococcus acidilactici* BCC-1 (109 cfu/kg) individually or in combination with xylanase (4,800 U/kg) can alleviate diarrhea in broilers, and provide benefits for gut health.

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

In yellow-feather broilers, supplementing a **polyherbal mixture** (composed of five traditional Chinese medicine herbs) at 1000 mg/kg improved growth performance and immune status of yellow-feathered broilers by enhancing antioxidant capacities, barrier function and modulated jejunal microbial communities.

*South China Agricultural University/ [Link](#)*

In broiler breeder pullets, feeding **diets diluted to 90% of nutrient** needs and provided as **pellet or crumble** did not have adverse effects on performance of pullets. Pullets fed a pelleted diet had a higher heterophil: lymphocyte ratio but showed no negative effects on health status during rearing.

*Gorgan University/ [Link](#)*

In laying hen diet at 45 weeks of age, supplementing **betaine** as a replacement of choline for 12 weeks improve performance, egg quality, and immune responses.

*Guangdong Academy of Agricultural Sciences / [Link](#)*

In Lohmann laying hens from 25 to 37 weeks of age, supplementing 400 mg/kg **theabrownins extracted from Pu-erh tea** improved egg albumen quality and antioxidant activity, and the Nrf2-ARE pathway were found to be involved in this process.

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

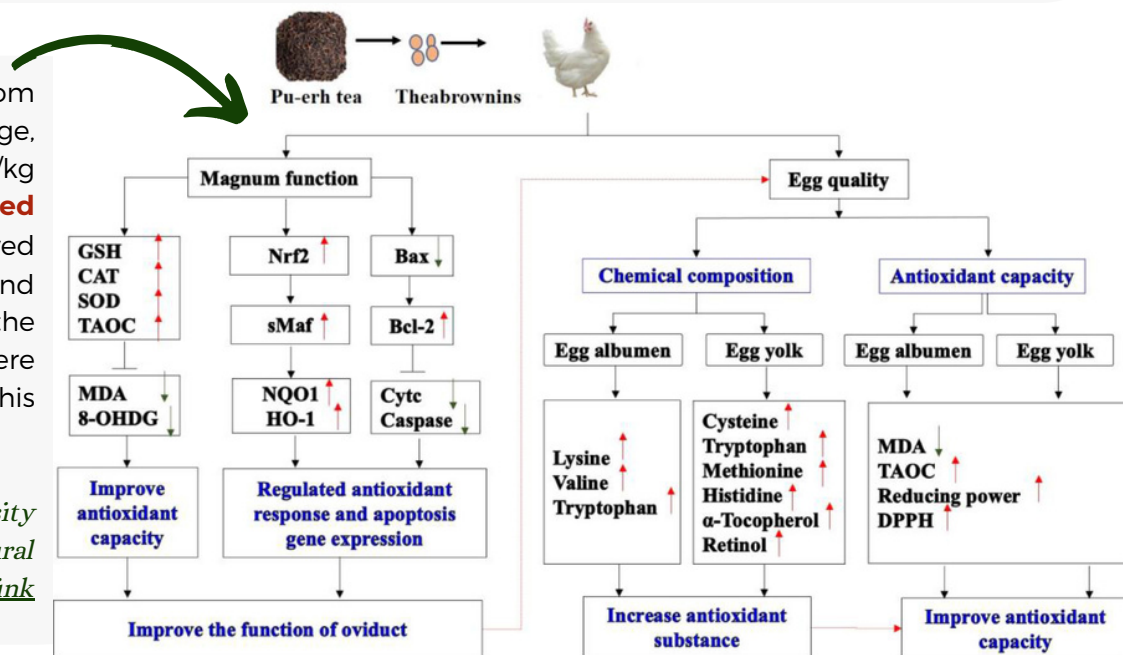


Fig. The overview of effect of Pu-erh tea theabrownins (TBs) supplementation in layers.

# LATEST NUTRITION RESEARCH AT A GLANCE

## POULTRY

### Review#1

#### Poultry gut health and beyond

Gut dysbiosis caused by excess nutrients in the diet may lead to decreases in gut integrity, leaky gut, and animal health concerns. This review will cover the aspects of nutrition and how it affects intestinal health, gut physiology, and immunology and highlight the cross-talk between gut microbiota and the host through metabolite and the nutritional steering and intestinal microbiome toward gut health improvement.

Ghent University | [Link](#)

### Review#2

#### Herbal and bee products as nutraceuticals for improving poultry health and production

**Nutraceuticals or bioceuticals** are natural derivative substances of plant origins that can be added to poultry diets up to 3% for health/production benefits or prevention/treatment of diseases. Some examples are organic acids, herbal products (black cumin or fenugreek), and honeybee products (bee pollen and bee venom). Supplementation of various natural substances can enhance various biological functions, well-being, meat and egg quality, growth performance parameters, and semen quality (see the summary graph). The current review summarized the past research on various nutraceuticals in poultry.

Alexandria University | [Link](#)

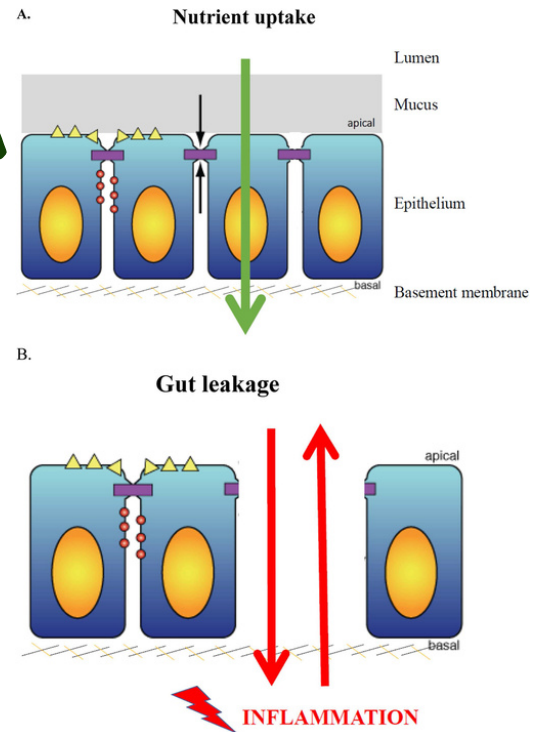
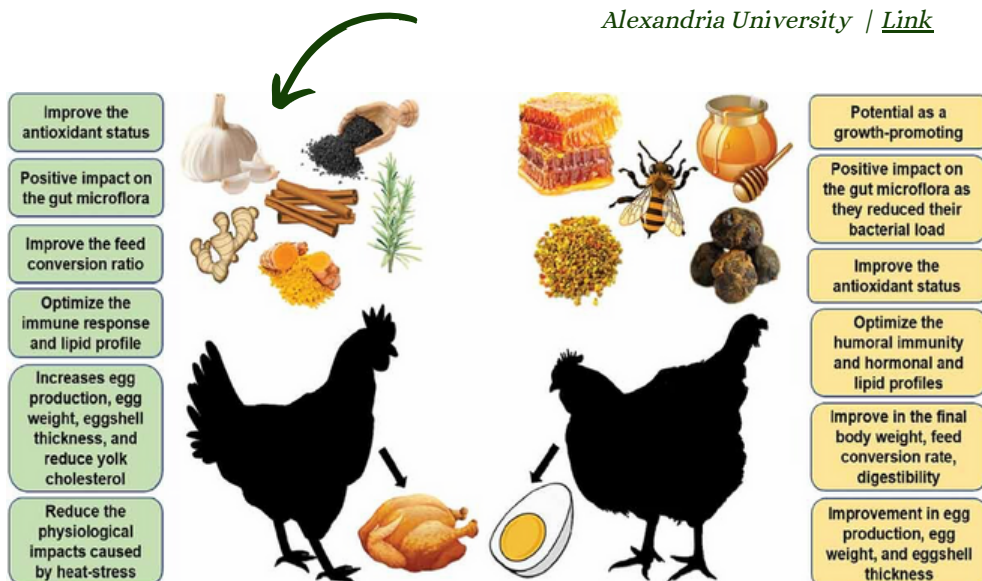


Fig. The intestinal epithelial cell is the orchestrator of gut health.

### Review #3

#### Nutritional Strategies to Improve Meat Quality and Composition in the Challenging Conditions of Broiler Production

The nutrient composition of feed, bioactive feed additives, and various environmental and pathogenic stresses could influence the meat quality and body composition of broiler chickens. The current review introduces the **stresses** such as fast growth rate, bacterial infections, coccidiosis, heat stress, mycotoxins, and oxidized fats on meat quality. Meanwhile, the **nutritional interventions**, such as energy and protein composition, vitamins, omega-3 fatty acids, and various feed additives to improve meat quality and change the body composition of broiler chickens, were also discussed.

University of Georgia | [Link](#)