Gut health check for poultry – do your birds pass?

In both human and animal health, focus is increasingly on gut integrity, to enhance health and boost immune levels. The focus is not just on controlling causes of ill-health but building physical barriers to repel challenges.

by Anne-Laure Dine,
Global Nutrition, France.
www.globalnutrition.com

In human medicine, health experts are making the link between the health of the gut, including intestinal morphology and bacterial balance and the incidence of heart problems. Growing evidence suggests diet and lifestyle impacts heart health by the influence it has on the balance of our microbiome.

Gut health

In animal medicine, gut health has been discussed over and over with particular attention on the use of probiotics to balance the impact of Antibiotic Growth Promoters (AGPs) on gut microflora.

In many regions AGPs are banned or are in the process of being banned.

Dr T. A. Niewold, University of Leuven, Belgium, hypothesised that "AGPs most likely work as growth permitters by inhibiting the production and excretion of catabolic mediators by intestinal inflammatory cells."

He concluded "Therefore, the search for alternatives could be aimed at non-antibiotic compounds with an effect on the inflammatory system similar to that of an AGP."

So what are the possible causes of inflammation in the gut?

- Feed/protein digestion
- Bacteria
- Mycotoxins
- Virus
- Dehydration
- Other (vaccines, foreign materials etc)

No single product will directly replace an AGP – the solution is more complex and usually requires a revised production system to address potential threats (HACCP) and improved biosecurity. In feed, a joint strategy of building the animal's physical and immunological defences, coupled with balancing gut microflora, is being increasingly adopted.

Inflammation of the gut results in malabsorption of nutrients, reducing performance and depending on the severity, immune status.

Inflammation can occur along the length of the gastrointestinal tract and, in particular, in the small intestine. Therefore, delivery of products to this area is critical to be effective.

The benefits of butyric acid in prevention and restoration of gut morphology including villi height is well documented, countering the impact of inflammation.

Coating of Ca-butyrate was developed to deliver the butyric acid further down the digestive tract where it could be useful. Early coating technology centred on using a vegetable oil that tended to dissolve rapidly once exposed to lipase, worsened by thin or incomplete coating of particles.

Consequently, coating technologies have been steadily improved with a new generation of Ca-butyrate products moving away from single outer-layer coating.

Global Nutrition International's new Pro-BED technology embeds the Ca-butyrate homogenously in each particle, to protect from early degradation in the stomach, and permitting a sustained, gradual release of Ca-butyrate throughout the digestive system.

Potential benefits

The potential benefits of this are three-fold:

- Allows the Ca-butyrate to strengthen the gut lining in the small intestine.
- Allows the Ca-butyrate to maintain or improve the villi height.
- Permits the Ca-butyrate to reach the large intestine to assist in the regulation of bacteria.

Globamax-B700 is the first Ca-butyrate product to contain the new Pro-BED technology. In addition to this, Globamax

1000 combines the properties of Globamax B700 with calcium lactate and Globafix (a mycotoxin adsorbent).

Combined, the three components provide a synergistic approach to gut health through control of inflammation, stimulating epithelial cell proliferation and microflora management, to optimise the health and the performance of the animals.

In terms of 'Gut Check', of the major causes of gut unrest outlined above, Globamax 1000 contributes to the reduction of inflammation caused by feed and protein digestion, bacteria and mycotoxins.

Global Nutrition's Gut Check Program provides a diagnostic and treatment check list, to assist decisions as to which product can be useful, for each condition.

Gut Check is divided into four key areas:

- Environmental status
- Nutritional status
- Mucosal status
- Microbial status

References are available
from the author on request
annelaure@globalnutrition.com

Table 1. Key factors that are critical to assess the status of your birds.

Condition	Impact	Solution
Nutritional status		
Mould	• Reduced palatability • Produce toxins • Depleted nutrient density	Mould inhibitor
Oxidation	• Rancidity of feed • Off taste • Toxicity	Antioxidant (non-ethoxyquin based)
Pellet quality	• Poor durability • Increased fines • Poor FCR	Pellet binder
Mycotoxins	• Oral and dermal lesions • Inflammation of mucosa • Immunosuppression	Mycotoxin adsorbent
Microbial status		
Dysbiosis	• Imbalance of microbial colonies • Poor homeostatic regulation • Poor digestion	Ca-butyrate (protected and unprotected) Tannin (hydrolysable) Acidifier blend
Enteric pathogens	• Pathogenic bacteria • Invoke immune response • Reduce FCR/Feed intake	
Mucosal status		
Villi length	• Low SA • Decreased nutrient absorption • Villus atrophy	Ca-butyrate (protected) Tannin (hydrolysable)
Tight junctions	• Leaky gut • Bacterial invasion into blood (necrotic enteritis) • Organ damage	
Inflammation	• Poor feed conversion ratio • Weakening of intestinal wall • Reduced mucus membrane	
Environmental status		
Wet litter	• Wet litter • Foot and breast lesions • Ammonia production	Litter drying agent
Water hardness Non- optimum pH	• Pathogens	Acidifier