Symposium: Amino Acids: New Paradigms in Poultry Nutrition and Health

Chair: Mojtaba Yegani, Evonik Corporation

Amino acids are a fundamental component of any nutritional program in poultry. With the advancement of our knowledge on amino acids, there is a renewed interest to look beyond their traditional role as “building blocks” of protein molecules. Constantly changing poultry production systems in different parts of the world have necessitated a better understanding of the critical roles that amino acids can play in both nutritional and health status of poultry. This symposium is intended to discuss these paradigms from a variety of perspectives to ensure that both scientific communities and the industry are well aware of these new developments.

8:00 am  Maximizing amino acid nutrition under constantly changing dietary ingredient composition
Todd J. Applegate, University of Georgia
Often, bioassays for feed ingredient digestibility have revealed underlying variation due to ingredient composition and repeatability which may or may not directly accounted for in day-to-day formulation. Similarly, additivity of these bioassay results have recently been confirmed by various researchers. Thus, it is imperative that formulating nutritionists understand the nuances these bioassays have on digestibility results for their extrapolation. This is extremely difficult to do as primary feed ingredient nutrient composition changes occur on a day-to-day, weekly, monthly, and or seasonal basis.

8:30 am  Considerations for amino acid nutrition with all vegetable diets and antibiotic free production systems in broilers
Randolph D. Mitchell, Perdue Farms LLC
Most nutritional requirements for broilers have been developed in conventional production systems. The use of all vegetable diets brings new challenges to optimizing amino acid density. Wet litter can be a major challenge with all vegetable diets. Balancing the potential benefits of feeding high density diets with the negative aspects of wet litter in all vegetable diets will be discussed. This is further complicated in antibiotic free production systems where enteric challenges are a constant threat. Formulation strategies for utilizing synthetic amino acids and limiting problematic ingredients in antibiotic free systems will be discussed in context with other management changes to reduce the risk of enteric disease.

9:00 am  Beyond growth – The role of functional amino acids for immune functions
Rose Whelan, Evonik Nutrition & Care, GmbH
The advancements made to poultry genetics and nutrition in the last 50 years have resulted in exponential improvements to feed efficiency and rate of growth of broiler chickens. For example, while only a few decades ago feed was formulated on a crude protein level, nutrient requirements can now be defined to the specificity of SID amino acids. Despite the
innovations in nutrition and genetics, the modern broiler is still susceptible to pathogens and other stressors that impair optimal growth performance. We aim to explore the underlying reasons why disease and environmental challenges impair growth, to understand how we can develop nutritional strategies to prevent this. We will discuss how we can support immune function and disease resistance through redefining nutrient requirements to not only meet the metabolic needs of a healthy animal, but to additionally optimize immune development and function. One future aim may be to develop dynamic amino acid recommendations that support immune development, vaccination efficacy and response to potential threats. This will allow us to provide healthy sustainable nutrition solutions to improve resistance to stressors and optimize growth in sub-optimal conditions.

9:30 am  The effects of amino acids on microbiota and gut health of poultry
Elizabeth Santin, Jefo Nutrition Inc.
The intestinal mucosa is in constant development and they need for specific amino acids will be discussed during the talk. In the microbiome aspects, we will present some information from human and to understand the effect of the surplus of crude protein or specific amino acids on the growth of a specific microorganism and/or metabolome production that could be beneficial or not for the host.

10:00 am  Break

10:30 am  Optimizing dietary protein levels in broiler breeder diets to improve production and chick’s performance and health
Rick van Emous, Wageningen University
Nowadays, management issues in broiler breeders, associated with nutrition and reproductive characteristics, are becoming increasingly challenging. Due to genetic selection on broilers, body composition of breeders has changed dramatically during the last 50 years to less fat and more breast muscle. It is postulated that a certain amount of body fat in broiler breeders at the onset of lay is necessary for maximum performance. Feeding pullets a low protein diet during rearing decreased breast muscle and increased abdominal fat pad. The higher abdominal fat pad content resulted in an increased hatchability during the first phase of lay and a larger number of eggs during the second phase of lay. On the other hand, a low daily protein intake during the rearing and first phase of lay can lead to a poor feather cover. It is possible to decrease CP level of breeder diets with comparable reproduction from 22 to 46 wk; however, this is questionable for the rest of the production period. In the second phase of lay a low total CP intake is recommend to maximize hatchability of fertile eggs due to a decreased embryonic mortality. Little, no or opposite effects on performance and processing yields of the offspring has been reported by a change in maternal daily protein intake. More research is necessary to produce a more clear and consistent answer on this multifaceted question.

11:00 am  Challenges and opportunities for precise amino acid nutrition to improve health and performance of broilers
Peter Chrystal, Baiada Poultry
Challenges and opportunities for precise amino acids nutrition to improve health and performance of broilers will be discussed. In some instances, information is well known, so very little time would be spent on those aspects. More time would be spent on the lesser known aspects such as changes in blood plasma AA profiles and the possible implications thereof. Digestion dynamics is also worth covering as CP reduces and the practical implications explored.

11:30 am  Questions & Answers
Meeting rates will go up on June 1, 2019. If you have not yet registered to attend, make sure to register for the meeting before this date to save on registration rates. Visit the [PSA Annual Meeting website](#) for more information.