New concept promoted in protein nutrition

New research demonstrates non-essential amino acids have functional roles similar to essential amino acids.

r. Guoyao Wu, distinguished professor of animal nutrition, university faculty fellow and Texas A&M AgriLife Research faculty fellow, is promoting a new concept in protein nutrition that will enhance production performance and feed efficiency in all animals.

According to Wu, research demonstrates that the so-called nutritionally non-essential amino acids (NEAA) are, in fact, nutritionally essential for optimal growth, development and health of all animals. Some of the NEAAs, such as arginine, glutamate, glutamine and glycine, and essential amino acids like lysine and methionine are functional amino acids. Appropriate amounts and proportions of all functional amino acids should be considered in formulating diets for animals, including dairy cows, Wu said.

Functional amino acids participate in and regulate key metabolic pathways to improve health, survival, growth, development, lactation and reproduction.

The first two limiting amino acids in dairy nutrition are methionine and lysine. Both havedirect and indirect metabolic functions.

Wu's research originated with glutamine

and arginine. While synthesized de novo in pigs, the endogenous provision of these two amino acids proved to be insufficient for piglet growth. Thus, Wu concluded that "animal nutritionists need to pay attention to not only the amino acids that are not synthesized de novo but also the amino acids that can be synthesized by animal cells."

Research also shows that nitrogen balance studies are not sensitive enough to fully evaluate the dietary requirements of NEAA, Wu said. Rather, the functional needs of an NEAA by mammals must be used as a criterion to define its dietary requirement. Hence, the century-old concept of NEAA should no longer be used in nutritional sciences, according to Wu.

Wu spoke during an Adisseo reception at the annual meeting of the American Dairy Science Assn. in Knoxville, Tenn. ■



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