

## New broiler trial ends 30-year debate on bioavailability of methionine sources

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A new trial<sup>1</sup> conducted using modern broiler genetics has confirmed that the bioavailability of methionine from liquid hydroxy analogue (MHA-FA) products is only about 65%, compared to DL-methionine (DLM) products such as MetAMINO®. This definitive finding is consistent with the recent scientific opinion<sup>2</sup> of the European Food Safety Authority (EFSA) and will help producers optimize feed costs.

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The study<sup>1</sup> was conducted at Schothorst Feed Research in the Netherlands and showed that the relative bioavailability of MHA-FA and DLM65 compared to MetAMINO® was 65% and 61% respectively. All the bioavailability estimates for MHA-FA were significantly lower than 88%, which is the active substance content.

“These results, which were obtained using broilers with modern genetics, confirm that the bioavailability of liquid methionine hydroxy analogue products – MHA-FA – is about 65% compared to that of MetAMINO® on a product-to-product basis,” explained Dr. Emmanuel Auer, head of Evonik’s Animal Nutrition Business Line.

“This is consistent with the 2018 EFSA scientific opinion of 66% on a product basis, and it is important for producers to bear that in mind if they want to optimize their feeds and make them as cost-effective as possible.”

Although DL-methionine products are used in the majority of poultry markets globally, around one third of producers use analogue products which are mainly in the liquid free acid form (MHA-FA).

“While these products may have an active content of 88%, research shows that far less of this content is biologically available – so producers need to be aware of that fact when they formulate their diets.”

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The study performance data also confirmed that the improvements associated with MetAMINO®, MHA-FA and DLM65 all showed a plateau at the highest levels, where there were no significant differences between them.

“This highlights the fact that bioavailability could be incorrectly interpreted if it is based on data from this part of the dose-response curve,” said Auer. “As a result, multi-exponential regression analysis of dose-response study data is essential to determine bioavailability of Met and other nutrients, and this study confirms the validity of that methodology.”

The study included 1,920 broilers that were fed starter (d0 to 11), grower (d11 to 28) and finisher (d28 to 35) diets with different methionine contents. Each group of 120 birds was given MetAMINO®, MHA-FA or DLM65 (MetAMINO® diluted with starch to a Met content of 65%) at five different levels (from 0.4 to 3.0g/kg). A basal group of 120 was given no additional methionine. Growth performance was evaluated for each phase and carcass evaluation carried out on day 35.

The results showed that increasing levels of all three Met products (MetAMINO®, MHA-FA and DLM65) was associated with improved growth performance and carcass yields compared to the basal diet. The highest Met supplement (3.0g/kg) improved BWG (body weight gain) by 70, 67 and 70% and reduced FCR (feed conversion ratio) by 22, 22 and 23% with MetAMINO®, MHA-FA and DLM65 respectively. Similarly, carcass yield improved by 13, 11 and 13%, and breast meat yield (as a percentage of body weight) by 62, 60 and 63%, with MetAMINO®, MHA-FA and DLM65 respectively.

Further statistical analysis of the data showed that MHA-FA was only 58, 66 and 62% as efficacious as MetAMINO® for BWG, FCR and EPEF (European production efficiency factor) respectively.

References:

1. Bioavailability of dl-methionine hydroxy analogue relative to dl-methionine and validation of the multi exponential regression approach by using 65%-diluted dl-methionine in broilers, 2018, Poultry Science Association 107th Annual Meeting Abstracts, #242
2. European Food Safety Authority (EFSA), 2018: safety and efficacy of hydroxy analogue of methionine and its calcium salt (ADRY+®) for all animal species, EFSA Journal 16 (3): 5198.

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