Reply: **DL-2-Hydroxy-4-(Methylthio)Butanoic Acid from any Commercial Source is Fully Available as a Source of Methionine Activity**

J. D. Richards,² J. J. Dibner, and C. D. Knight

*Novus International Inc., St. Charles, MO 63304*

2007 Poultry Science 86:1613–1614

We would like to thank D. Hoehler for his comments ("A Misleading Approach to Determine the Methionine Activity of Organic Trace Minerals"), giving us the opportunity to clear up several misconceptions that he and possibly others may have regarding the chemical structure and biological activity of Mintrex organic trace minerals. First, Mintrex organic trace minerals are not the calcium salts of DL-2-hydroxy-4-(methylthio)butanoic acid (DL-HMTBA), as he describes. Rather, Fourier transform infrared spectroassay and crystal structure analyses have demonstrated that Mintrex molecules are atoms of Zn, Cu, or Mn, each chelated by 2 molecules of DL-HMTBA. The calcium salt of DL-HMTBA is another molecule entirely. Although the calcium salt is fed to provide Met activity, the main purpose of feeding Mintrex is to provide a highly bioavailable source of trace minerals. Nevertheless, the DL-HMTBA ligands in Mintrex would be expected to provide substantial Met activity, which is clearly demonstrated in our paper (Yi et al, 2007).

Second, the notion that DL-HMTBA is inferior as a source of Met activity is a fallacy. Numerous refereed publications have demonstrated that DL-HMTBA is equivalent to DL-Met (DLM) as a source of Met activity, including a recent multi-regression analysis of 62 papers in the literature containing over 400 observations for each Met source (Vázquez-Anón et al., 2005). It should be pointed out that this is a much more extensive set of literature than that used in the review referenced by Hoehler (Jansman et al., 2003). Furthermore, the methods used by the Jansman review have been challenged as inappropriate (Kratzer and Littell, 2006). This is because DL-HMTBA and DLM are different molecules: DL-HMTBA is not Met; it is a precursor of Met. As such, DL-HMTBA is metabolized substantially different than DLM once presented to the animal for absorption (Dibner, 2003; Lobely, 2005). Consequently, DL-HMTBA does not function as a dilution of DLM; rather, the 2 compounds demonstrate different forms of dose responses. For a complete discussion of these differences and the appropriate methodology to use in comparing the sources, the reader is referred to Kratzer and Littell (2006), Vázquez-Anón et al. (2006), and González-Esquerra et al. (2007).

It is true that our paper compared DL-HMTBA from Mintrex with DL-HMTBA from Alimet feed supplement and did not include a DLM treatment (Yi et al., 2007). Nevertheless, the body of published evidence demonstrates that DL-HMTBA from any commercially available source is fully available as a source of Met activity.

**REFERENCES**


Dibner, J. J., R. C. Durley, J. G. Kostelc, and F. J. Ivey. 1990. 2-Hydroxy-4-methylthio butanoic acid (HMB) is a naturally


