

**S177 The plasma dose response technique: Its application in determining relative bioavailability of rumen protected amino acids.**

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The plasma-dose response technique (slope-ratio assay) has been used in swine amino acid nutrition to determine the effects that supplying limiting amino acids has on plasma amino acid concentrations in sows and growth in young animals. For the plasma free AA dose-response technique to be a widely accepted method for determining relative bioavailability (RBV) of RPAA supplements, a positive linear response between increasing amounts of infused or fed AA and plasma AA concentrations must be unequivocally established. This has been shown in literature for both Met and Lys. Rulquin and Kowalczyk in 2003 were the first to use the plasma free AA dose-response technique to measure bioavailability of Lys and Met in rumen protected AA (RPAA) supplements. Their work showed linear responses for both Lys and Met with a large amount of cow variation for Lys. The plasma-dose response technique used today differs from Rulquin and Kowalczyk in that it is replicated Latin square design with 7 d periods and the cows receive all treatments. The RPAA supplements are placed in TMR for 8 h before being feed to the cows and infusions are continuously infused into the abomasum vis the rumen cannula, except for when cows are being milked. The diet is balanced to meet the nutritional needs for the cow so that energy is not a limiting factor. Using this technique, 39 Lys products have been evaluated with their RBV ranging from 5 to 85% and 17 Met products with their RBV ranging 15 to 80%. Therefore, the plasma free AA dose-technique is a robust, but simple, method of providing accurate and reliable estimates of bioavailability starting with product evaluation begins with addition to ration. Linearity of response is the only required assumption; proven for the most limiting AA and minimal steps and calculations are involved, minimizing experimental error.