

Apparent, standardized, and true ileal digestibility of amino acids: What is the difference and practical significance?

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Ileal digestibility values for AA may be expressed as apparent (AID), standardized (SID) or true (TID) ileal digestibility values. These terms are used to specify how ileal endogenous AA losses were considered in the measurement of digestibility. The endogenous losses consist of AA that were secreted into the GI-tract by the animal and not digested and reabsorbed before reaching the distal ileum. These losses are divided into the basal losses and the diet-specific losses. The basal endogenous AA losses are the sum of the fasting endogenous AA losses and AA that are secreted in response to the presence of DM in the intestinal tract. These losses are constant across feed ingredients and may be quantified by feeding a N-free diet. The diet-specific endogenous losses of AA are secreted in response to the presence of fiber and(or) anti-nutritional factors in the intestinal tract. These losses vary among different feed ingredients dependent on the concentration of fiber and anti nutritional factors in the ingredient. The AID are calculated if all AA in the ileal output are subtracted from the intake of AA. The net quantities of AA that are absorbed from feeding a specific diet are most accurately estimated by calculating the AID. However, if values for AID are measured in individual feed ingredients, then these values are not always additive when the ingredients are

included in mixed diets. The AID may be corrected for the basal endogenous losses of AA which results in the calculation of SID. Values for SID obtained in individual feed ingredients are additive in mixed diets. If the AID values are corrected for both basal and specific endogenous losses, then values for TID are calculated, but reliable procedures to routinely measure specific endogenous losses are not available. Therefore, values for SID should be used in practical feed formulation and when assessing the requirements of AA by the animals. Values for AID may be used to estimate the net absorption of AA from a specific diet. Values for TID are usually not used in practical animal production.

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