Amino acid availability and digestibility in pig feed ingredients: Terminology and application

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The adoption of the terminology and methodology proposed in this paper should facilitate the exchange of unambiguous information on amino acid (AA) availability and ileal digestibility (ID) in feed ingredients for pigs. Two main factors can contribute to differences between availability and ID of AA. First, some AA, especially lysine, may be absorbed in chemical complexes that preclude their metabolism. Second, fermentation in the upper gut may result in a net loss or gain of AA to the pig. Values for ID may be expressed as apparent (AID), standardized (SID) or true (TID). AID values are calculated by deducting the total ileal outflow of AA (the sum of endogenous losses (IAA_{end}) and non-digested dietary AA) from dietary AA intake. IAA_{end} may be separated into basal losses, which are not influenced by feed ingredient composition, and specific losses induced by feed ingredient characteristics such as anti-nutritional factors and dietary

fiber. Lack of additivity of AID values in feed formulation may be overcome by correcting AID values for basal IAA_{end}, which yields SID values. If the AID values are corrected for total IAA_{end}, then values for TID are calculated. Until reliable procedures for the routine measurement of specific IAA_{end} become available, it is suggested that SID values are used for feed formulation. It is recommended that basal IAA_{end} are measured in digestibility experiments using a defined protein-free diet and that these losses are reported with SID values.