

# Amino acid availability in poultry—*in vitro* and *in vivo* measurements

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## Abstract

Methodology to evaluate the protein quality or amino acid availability in feed ingredients for poultry using *in vitro* (enzymic, chemical, or microbiological assays), indirect *in vivo* (plasma amino acid assays), or direct *in vivo* (growth or digestibility assays) measurements has been reviewed. The specific applications and limitations of these methods are examined. *In vitro* assays are useful in providing information on heat damage in selected protein sources under defined conditions, and on relative ranking of different samples, but they cannot form the basis of practical feed formulations. While growth assays remain the only direct means of confirming nutritional relevance of values obtained by other procedures, *in vivo* digestibility assays appear to be most useful, at present, to estimate amino acid availability. Amino acid digestibility assays in poultry should be based on the analysis of digesta from the terminal ileum rather than excreta, because of the variable and modifying effects of hindgut microflora. Techniques used to estimate endogenous amino acid losses in poultry are discussed. The needs for correction of endogenous losses in amino acid digestibility calculations and the relative merits of apparent and true digestible amino acid systems are still being debated. It is, however, clear that both digestible amino systems are superior to the total amino acid system currently employed to formulate practical diets. Digestible amino acid values are likely to form the basis of poultry feed formulations in the future. In particular, there is an urgent need for more precise information on the variation in digestible amino acid contents of locally grown ingredients and on the factors causing this variation (e.g. variety, location, season, agronomic practices, processing, etc.).

## Full Text

<http://www.publish.csiro.au/nid/40/paper/AR98174.htm>