

BIOAVAILABILITY OF ENERGY IN CHICKENS AND DUCKS FED PEANUT MEAL
SUPPLEMENTED WITH OIL AND SULPHUR-CONTAINING AMINO ACIDS

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Reported here are the results on the bioassay described earlier (Ostrowski-Meissner 1983) for the simultaneous assessment of apparent (AME) and true (TME) metabolizable energy in chickens and ducks as affected by oil added to peanut meal when the deficiency of sulphur-containing amino acids was eliminated by the supplementation with either DL-methionine (Met) or L-cysteine (Cys).

Eight Pekin drakes and five Shaver Starcross 288 cockerels (15 to 18 months old) were used in an assay for the simultaneous assessment of AME and TME according to the methodology described previously (Ostrowski-Meissner 1984a). The peanut used in the assay after harvest was dehulled, oil was mechanically expressed from kernels (34.3% crude protein and 49.7% fat as ether extract) using an expeller process. Peanut expeller (PNE) contained 48.1% CP and 7.4% fat. Either PNE or PNE + oil previously expressed from kernels and returned to its original level in peanut (PNO) were used in the following alternatives: (i) without supplementation with sulphur-containing amino acids; or supplemented with either (ii) DL-methionine (Met) or (iii) L-cysteine each time to the level of 7.4 g/kg ration.

The effect of supplementation of peanut expeller (PNE) with oil (PNO) and DL-methionine (Met) and/or L-cysteine (Cys) on bioavailability of energy (MJ/kg) in chickens (Ch) and ducks (Du):

Measurement	Type of bird	PNE			PNO		
		No. suppl.	+Met	+Cys	No. suppl.	+Met	+Cys
AME	CH	14.8	14.7	15.2	15.8	15.9	15.8
	Du	15.3	15.4	15.6	16.4	16.4	16.3
TME	CH	13.4	13.6	13.7	14.6	14.8	14.7
	Du	13.5	13.9	14.3	15.1	15.4	15.4

The results indicate that neither the AME nor TME values of oil put into peanut meal are additive. It appears that additivity of TME values for feedstuffs claimed by Sibbald (1982) should be re-assessed in view of the different responses of particular types of birds to supplementation with different forms of critical amino acids (i.e. Met or Cys).

The differences in TME values due to supplementation of either PNE or PNO with either Met or Cys may be ascribed to the differences in metabolic pathways reported earlier (Ostrowski-Meissner 1984b), along which Met or Cys are utilised in animals in the processes related to protein metabolism, the efficiency of which depends on the metabolically-available energy. Results of the present study confirm earlier conclusions (Ostrowski-Meissner 1984b) suggesting that there be further investigations into the utilisation of dietary energy and protein by poultry species in relation to the form of amino acid supplementation of rations which may be deficient in sulphur containing amino acids.

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