

METABOLISABLE ENERGY AND PROTEIN QUALITY OF FEEDS CONTAMINATED WITH AFLATOXINS FOR DUCKS AND CHICKENS

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Levels of 50 µg aflatoxins (AF)/kg and higher (up to 200 µg/kg) are frequently detected in poultry feeds, particularly in areas where infection of feeds with the AF-producing fungus Aspergillus flavus is inescapable (i.e. in the humid tropics) and when feeds are not properly dried prior to and/or during their storage. Such AF concentrations have no visible effects on chickens but may significantly alter the metabolisability of energy and utilization of dietary proteins by ducks (Ostrowski-Meissner 1983a). In order to prevent the adoption of erroneous values describing the energy and protein properties of AF-contaminated feeds for ducks, a situation which may occur when such values are derived from nutritional tables for chickens, the protein quality and metabolisability of energy from a variety of common poultry feeds prior to and after AF contamination were determined on chickens and ducks.

Protein efficiency ratio (PER) and true metabolisable energy (TME) in 13 feeds prior to and after their infection with Aspergillus flavus providing 200µg AF/kg final ration were determined, using previously described procedures (Ostrowski-Meissner 1983a,1983b), either on 7-day-old (PER) or mature (TME) birds.

TME (MJ/kg) and PER of feeds, either AF-free or contaminated with 200 µg AF/kg, for ducks (D) and chickens (C).

Feed	CP (%DM)	AF-free				200µg AF/kg			
		TME		PER		TME		PER	
		C	D	C	D	C	D	C	D
Fish Meal	60.4	9.3	9.4	2.71	2.74	9.6	9.8	2.73	2.07
Meat and bone meal	45.7	7.2	7.2	1.73	1.71	7.8	8.0	1.75	1.22
Soybean meal	43.8	9.2	9.3	1.97	1.94	9.4	9.9	1.93	0.65
Peanut meal	44.8	13.6	13.8	1.68	1.70	14.1	14.4	1.65	0.41
Coconut meal	25.5	6.5	6.3	1.92	1.93	6.8	7.0	1.96	0.57
Leaf protein	47.6	9.2	9.1	1.88	1.86	9.5	9.7	1.88	1.08
Leucaena leaf meal	32.1	7.9	8.0	NG†	NG	8.3	8.3	NG	NG
Corn	11.8	14.0	14.1	0.84	0.80	14.4	14.6	0.81	0.43
Cracked rice	11.4	12.0	12.2	1.15	1.17	12.7	12.8	1.18	0.56
Rice polishings	14.2	13.1	13.0	1.42	1.41	13.4	13.9	1.44	0.64
Rice bran	13.6	9.0	9.2	1.97	1.98	9.7	9.8	1.96	1.02
Wheat	13.2	14.5	14.3	1.44	1.46	14.9	14.9	1.48	1.08
Sorghum	10.3	13.5	13.5	0.82	0.84	13.8	14.0	0.84	0.61

† NG = negative growth.

Results indicate that the protein quality of feeds contaminated with AF and fed to ducks was substantially reduced, while TME of feeds contaminated with Aspergillus flavus was slightly higher or unaltered, compared with the AF-free feedingstuffs. Therefore, when contamination of duck feeds with AF is suspected, the protein quality of feed ingredients, using the values for chickens, may be substantially over-estimated, resulting in diets which may not meet the protein requirement of ducks affected by AF.

OSTROWSKI-MEISSNER, H.T. (1983a). Trop. Anim. Health Prod. 15:(in press).

OSTROWSKI-MEISSNER, H.T. (1983b). J. Sci. Fd Agric. 34:(in press).

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