



FATS AND PROTEINS RESEARCH FOUNDATION, INC.

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AMINO ACIDS IN POULTRY BY-PRODUCT MEALS HIGHLY AVAILABLE

Professor E. L. Stephenson, with grant support from FPRF, is studying the nutritive value of animal by-product meals in broiler rations. A recent report from Professor Stephenson shows that the essential amino acids in feather meal (FM), poultry by-product meal (PM) and mixed processed feather meal and poultry by-product meal (PBP) are highly available to broilers (Table 1). These results are most gratifying and demonstrate conclusively that amino acid availability in these products is much higher than would be expected from the pepsin digestibility test.

The results presented here were selected from those reported by Professor Stephenson. However they are representative; only one sample of mixed processed meal (PBP) showed significantly lower values.

ANIMAL BY-PRODUCT MEALS IN BROILER RATIONS

Professor T. D. Runnels, University of Delaware, with grant support from FPRF, has recently completed a series of broiler feeding trials in which meat and bone meal, poultry by-product meal and/or fish meal were substituted in varying amounts for soybean meal in a basic corn-soybean meal, computer-formulated diet. The results (Table 2) show that gains and feed efficiencies were not significantly different on any of the diets with the possible exception of the broilers receiving the diet containing 20% meat and bone meal.

Table 1. Availability of Essential Amino Acids in Poultry By-Product Meals (Mean percentage and standard error)

Product Sample:	FM	FM	PM	PM	PBP	PBP
	1	2	3	4	5	6
Arginine	98±0.4	97±1.1	98±0.9	99±0.3	94±2.6	94±0.9
Cystine	97±0.7	95±2.0	94±3.4	97±0.8	86±1.5	88±2.0
Glycine	95±0.8	93±3.4	95±1.6	96±1.6	93±1.0	88±1.1
Histidine	95±0.6	92±3.5	96±1.6	98±0.6	93±0.7	93±1.4
Isoleucine	98±0.6	97±1.4	96±1.6	98±0.8	95±1.0	92±0.8
Leucine	97±0.7	96±1.6	96±1.5	98±0.7	95±0.7	92±0.8
Lysine	95±4.0	94±2.6	97±1.3	98±0.6	94±0.8	92±0.6
Methionine	95±0.6	94±3.0	98±0.9	99±0.5	95±1.1	92±1.2
Phenylalanine	98±0.6	96±1.6	97±1.2	98±0.6	94±0.9	91±0.8
Threonine	97±0.9	95±2.1	97±1.5	98±1.0	94±0.9	91±0.9
Valine	97±0.9	97±2.4	97±1.4	98±0.6	94±0.9	90±1.0

Table 2. Effect of Protein Supplement Source on Gain and Feed Utilization of Broilers (Cockerels at 7 weeks of age)

Diet	Weight lbs.	Feed/ Weight
Basal - Soybean Meal	3.38	1.66
5% M&B Meal	3.37	1.64
10% M&B Meal	3.25	1.67
15% M&B Meal	3.37	1.67
20% M&B Meal	3.11	1.73
10% M&B Meal, 5% Fish Meal	3.28	1.65
10% M&B Meal, 10% Fish Meal	3.44	1.64
5% Fish Meal	3.34	1.65
10% Fish Meal	3.38	1.64
10% M&B Meal, 5% PBP Meal	3.45	1.61
10% M&B Meal, 10% PBP Meal	3.31	1.64
5% PBP Meal	3.44	1.71
10% PBP Meal	3.46	1.59
10% M&B Meal, 10% Fish Meal, 10% PBP Meal	3.30	1.66
10% M&B Meal 5% Fish Meal, 5% PBP Meal	3.25	1.67
Least Cost (4.82% M&B Meal, 8.38% PBP Meal)	3.35	1.64