



Dietary lysine affects carcass quality and meat yield in broiler chickens

Objective

To determine the effect of dietary lysine level in the grower diet on broiler tissue composition.

Experimental Procedures

Animals

1080 sexed chicks were provided with a common starter diet from 0-4 weeks of age. From 4-6 weeks, birds were divided into 3 replicate groups of 60 birds per pen and 6 treatments (2 sexes x 3 diets). Feed intake and body weight was taken on all birds at 42 days of age. Three groups of 10 carcasses from each pen were evaluated for 1. chemical composition, 2. meat, skin, and bone, 3. raw and cooked parts distribution.

Diets

Feed containing .85, .95, and 1.05% lysine were offered from 4 to 6 weeks of age *ad libitum*

Ingredient	%
Soybean meal	15.00
Sesame meal	15.00
Corn	61.35
DL-Methionine	0.10
Poultry fat	5.00
Other to 100% ¹	
Analyses ²	
% Moisture	12.30 ± .30
% Crude protein	19.40 ± .20
ME Kcal/g	3.23 ± .06
% Lysine	0.85 ± .05

¹Dicalcium phosphate 1.0, limestone 1.5, salt 0.35, vitamin mix 0.5, mineral mix 0.25, "Amporlium Plus" 0.05.

²Actual analysis ± standard deviation.

Table 2. Effects of lysine level on broiler performance

Sex	% Lysine (28-42 d)	Weight (g) (42 d)	F/G (28-42 d)	% Breast
M	.85	1731	2.34	29.9
	.95	1753	2.26	30.2
	1.05	1765	2.14	30.4
F	.85	1419	2.41	31.3
	.95	1450	2.26	31.5
	1.05	1434	2.27	31.7
SEM		13.3	.037	.27
Sex		***	*	***
Lysine		NS	**	*

* P<.05
** P<.01
*** P<.001

Discussion

Increasing lysine levels from 0.85 to 1.05% had no effect on final body weights. Significant improvements in feed efficiency and breast yield were observed in both sexes. Significant increases in whole carcass protein and cooked carcass meat and decreases in whole carcass fat and cooked carcass skin were also consistent across sexes. These changes represent potential improvements both from an economic and a consumer preference standpoint.

Table 3. Effect of lysine level on carcass quality						
Sex	% Lys (28-42 d)	Whole Carcass %		Cooked Carcass %		
		Protein	Fat	Meat	Skin	Bone
M	.85	41.3	44.2	55.2	12.6	28.7
	.95	45.1	37.1	56.3	12.4	28.8
	1.05	46.7	34.3	56.4	11.8	27.3
F	.85	42.0	42.4	57.1	14.4	27.5
	.95	42.5	39.5	59.2	13.1	26.0
	1.05	43.4	37.3	59.6	12.3	26.9
SEM		1.07	1.63	.51	.23	.40
Sex		Ns	NS	***	***	**
Lysine		*	**	**	***	NS

* P<.05

** P <.01

*** P < .001

Conclusion

Since lysine is often limiting in broiler rations and carcass protein is very rich in this amino acid, it is logical to suppose that increasing lysine should be a simple method to improve carcass quality. The study clearly demonstrated this. The lysine requirement for maximal growth has been shown to be lower than that for optimum feed efficiency and carcass quality. With increasing consumer demand for low fat products and increased further processing of poultry, the importance of adequate lysine levels for optimum carcass quality must not be underestimated.

Bibliography

Moran, E.T. Jr., 1988. Proceedings of the California Animal Nutrition Conference, pp. 46-52.