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STUDIES ON FEATHER MEAL SUPPLEMENTATION IN RABBIT'S DIETS

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INTRODUCTION

In Egypt, the number of slaughtering house of poultry are increased gradually. Many poultry by-products are produced from these houses. Feather is one of these byproducts which have high protein content. Under the present condition a lot of feather are produced in Egypt without satisfactory using.

The annual production of wet feather in Hungary is about 30 - 40 thousand tons, however there is no good way of satisfactory usage. The wet feather represent about 47 % of the by-products of poultry processing as reported by Laszlo (1985). The same author indicated that the feather take a great part of the meat meal of poultry. Sothat the digestible protein of mixed poultry protein meals ranged between 30 and 42, meanwhile the desired percentage is 80%. In order to reach that level, the by-products must be graded for their different components.

The high ratio of feather meal in rations caused bad results. Thus many producers avoid the addition of feather meal in the diet . On the other hand, Good results were reported by Gippert(1985) where the digestibility coefficients of crude protein and crude fat were 79 and 93% respectively.

The present study aimed to investigate the effect of supplementation the diets of adult rabbits with feather meal on feed intake and digestibility coefficients.

MATERIALS AND METHODS

The experiment was carried out at the Rabbit Farm of the Animal Breeding and Nutriton Research Institute, Godollo , Hungary during August 1986. Sixteen adult and non pregnant New Zealand White female rabbits of five months old were used in this study. The animals had an average body weight of 3796 ± 120 g. Feather meal was obtained from poultry slaughtering house in Zagyvarekos, Hungary. The used feather meal was prepared from slaughtered water fowl (geese and ducks).

Rabbits were divided into 4 groups each of 4 animals to be housed individually in metabolic cages. After 5 days pretreatment period the animals of each group were fed on basal diet (BD), BD + 3 % feather meal (FM) , BD + 6 % FM or BD + 9 % FM. The BD consisted of 40 % barley, 36 % maize , 20 % wheat straw meal and 4 % vitamin premix, salt, limestone and minerals (AP-17).

Feed intake was recorded during the 6 th , 7 th and 8th day for each rabbit. Faeces were quantitatively collected for each rabbit during the same period. Samples were taken and dried for chemical analysis. Chemical analysis of feather meal, basal ration and faeces was carried out in the laboratory of Nutrition Departement of the Agricultural University in Godollo according to A.O.A.C. (1980). The chemical analysis of feather meal revealed the following percentages : 92.8 , 71.1, 15.8 and 6.15 for dry matter, crude protein, crude fat and crude ash contents, respectively. Whereas the chemical composition of the experimental diets are given in the following table :

Exp. Diets	Composition %		Chemical analysis %			
	BD	FM	C.P.	E.E.	C.F.	NFE
A	100	-	8.6	2.92	9.80	59.9
B	97	3	10.5	3.36	9.77	58.1
C	94	6	12.3	3.68	9.21	56.3
D	91	9	14.2	4.08	8.92	54.5

Statistical analysis was done according to Svab (1973) by using Comod computer.

RESULTS AND DISCUSSION

1. Feed intake

It was observed that the feed intake was significantly (P 0.01) increased with elevating the feather meal level up to 6 % as shown in tables 1 and 2. Animals fed the diet B, C and D had higher feed intake by 20.6 , 36.0 and 17.8 % than the control diet A.

According to the results presented in table 1 , Figure 1 was made in order to determine the optimum level of feather meal which leads to the highest daily feed intake. The P point represents this level. This figure indicated that the optimum level of feather meal is about 5.7 % of the diet. The predicted feed intake of rabbits on this level of feather meal is about 202 g / day.

2. Digestibility coefficients :

a. Dry matter

Concerning the dry matter digestibility it was noticed that the supplementation of the basal diet A with FM increased its value than the control. However the increase was not significant except that of the C diet (6 % FM) where it was significant (P 0.01) as shown in Tables 1 and 2.

As previously mentioned with feed intake, Figure 2 was made to determine the optimum level of FM which leads to the better digestibility coefficient of dry matter. From this figure it was observed that the optimum level of FM is about 6 % of the diet where the digestibility coefficient of dry matter reached the best value being 89.3 %.

b. Crude protein

The digestibility of crude protein was increased also by FM supplementation. The increase on diet C and D was significamt (P 0.01) while it was not significant on diet B as shown in tables 1 and 2 .

c. Crude fat

Crude fat digestibility was affected by FM supplementation

where the differences among the four experimental groups were significant (P 0.01) as shown in tables 1 and 2. The digestability of crude fat was significantly (P 0.01) increased on diet C only.

d. Crude fiber :

As regard to the digestibility of crude fiber, it was observed that it was slightly decreased on diet B. However it tended to be increased significantly (P 0.01) on diets c and D as shown in tables 1 and 2.

e. Nitrogen-free extract :

The digestibility of N-free extract was significantly (P 0.01) decreased on C diet as shown in tables 1 and 2.

Generally, it was noticed that when the basal diet was supplemented by 6 % FM (C diet) the feed intake and digestability of dry matter, crude protein, crude fat and crude fiber were increased. However, the N-free extract was decreased than those of the other experimental FM supplemented groups.

Enough literature are not available on the usage of FM in rabbit diets. Yet, it was concluded that the FM may be used in fattening diets of broiler rabbits up to 4 % level without detrimental effect on their growth performance (Gippert, 1981). However, in feeding adult Angora rabbits this level may be about 2.5 % (Gippert and Lacza, 1982).

The obtained results indicated that in feeding adult meat type rabbits (such as New Zealand White) the FM could be used satisfactorily as 5.7 to 6 % level in the diet to increase both feed intake and digestibility coefficients.

SUMMARY AND CONCLUSION

This study was carried out in the Rabbit Farm of the Animal Breeding and Nutrition Research Institute, Gedollo. Sixteen adult and non-pregnant New Zealand White does have an average body weight of 3976 ± 120 g were divided into 4

groups and housed individually in metabolic cages. The experimental A, B, C and D groups were fed on the experimental diets; basal diet BD . BD + 3 % feather meal FM, BD + 6 % FM and BD + 9 % FM, respectively.

Chemical analysis of basal diet, FM and faeces were carried out in the laboratory of Nutrition Departement of the Agricultural University in Godollo.

The obtained results from this study indicated that when the basal diet was supplemented by 6 % FM the feed intake and digestibility of dry matter, crude protein and crude fiber were improved than the other experimental groups. However, the N-free extract was decreased.

Generally, it could be concluded that in feeding adult meat type rabbits the feather meal could be used satisfactorily as 5.7 to 6 % levels in their diets with good results of feed intake and digestibility coefficients.

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Table 1 : Feed intake and digestibility coefficients in rabbits as affected by feather meal (FM) supplementation

Diets	Daily feed intake (g)	Digestibility coefficients %				
		Dry matter	Crude protein	Crude fat	Crude fiber	N-free extract
A (BD)	146.1^{a}	80.0^{a}	43.5^{a}	93.5^{ab}	62.2^{a}	94.6^{b}
B (3% FM)	176.2^{b}	84.7^{ab}	46.5^{a}	91.6^{a}	60.2^{a}	94.3^{b}
C (6% FM)	198.7^{c}	89.3^{bc}	80.8^{c}	96.7^{c}	84.4^{c}	75.9^{a}
D (9% FM)	172.1^{b}	85.7^{ab}	66.9^{b}	95.5^{bc}	76.8^{b}	96.6^{b}

Means in each column have the same letter are not significantly different.

Table 2 : Results of the analysis of variance of feed intake and digestibility coefficients as affected by feather meal supplementation

S.O.V.	d.f.	M.S.					
		Feed intake	Dry matter	Crude protein	Crude fat	Crude fiber	N-free extract
Total	15						
Bet. groups	3	1859.8**	58.73**	1244.57**	20.17**	542.99**	375.38**
Error	12	31.39	8.51	10.56	3.69	4.89	6.41

** Significant at 0.01 level.

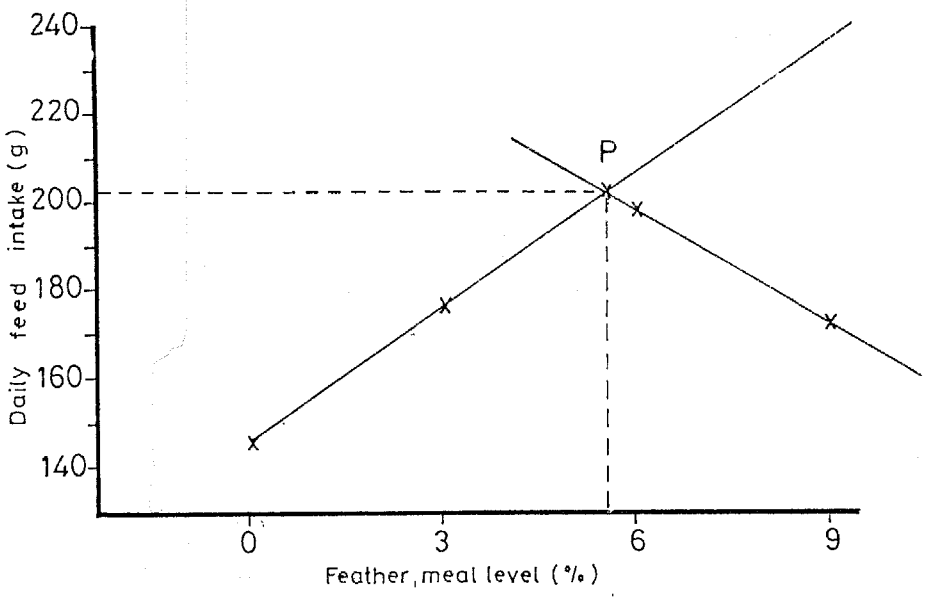

Fig. 1: Effect of feather meal level on the feed intake (g/day/ individual).

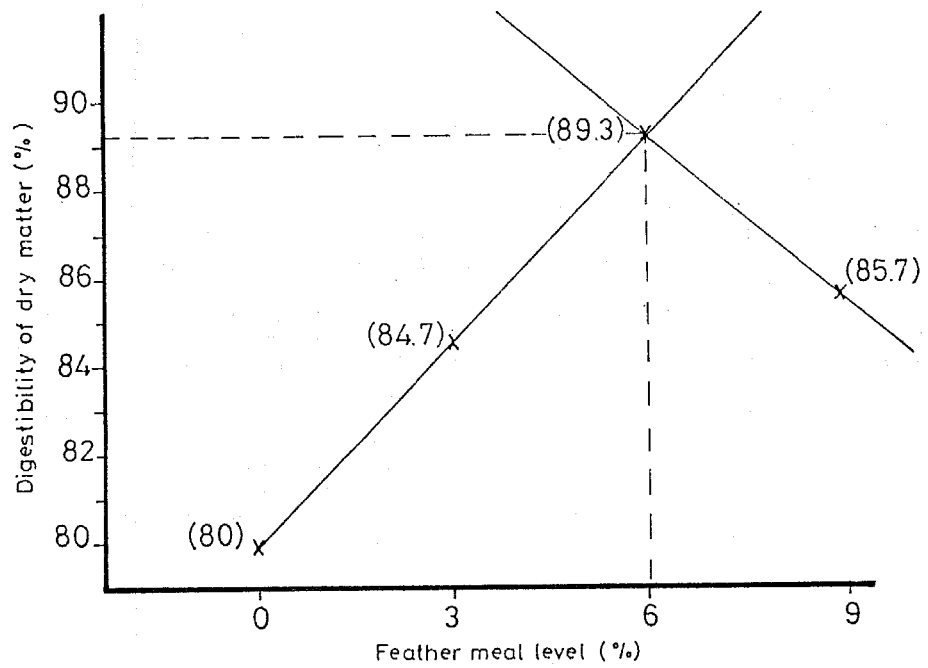

Fig. 2: Effect of feather supplementation on the digestibility of dry matter

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UNTERSUCHUNGEN ZUR AUFNAHME VON FEATHER MEAL AUF KANINCHEN FETTERUNG

Unbersuchungen zur aufnahme von Feather meal auf kaninchen's Fetterung wurde in Tieren Zuchtung and Nutrition Research institute Godello durchgefahrt.

Sechthen Femalen adult nicht schwangen von Sorte NZW mittel gewicht, die durchschittlichen 3976 ± 120 Gramen und geteilet zur 4 Groupen und in hauseren individaullen Metabolic cages. Die versuche A,B,C and D groupen waren base' diet BD, BD + 3% mit meal FM, BD + 6 % FM and BD + 9% FM ordentlich gegessen heben. Chemicalen analysis auf grund Fetterung, FM and faecen wurde in die Natrition, Dept. labor, landwirtschaftlichen Universitate, Godollo durchgefart. Die Ergebinsse von der Arbeit verdeutlich, daB bei 6 % FM extera gemecht zur die Normel Essen der Tieren gegeben, die intake des Essen und die digestibility von der drucken material, Protein Crude, Fiber Crude waren verbessen gewurden.

Vorliegenden Ergebnisse belegen, daB sich 5.7 - 6 % level von FM zur des Essen gemicht konnen haben, das verbessern die Fetterung und ihre digestibility.