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The Use of Dried Pigeon Dropping in Rabbit Nutrition

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SUMMARY

Forty New Zealand White rabbits , five weeks old , were allocated equally to four groups and kept individually in cages . The rations werw isocaloric isonitrogenous containing varying levels of dried pigeon droppings (0 , 6 , 12 and 18 %) . Also , the dietary fibre levels were similar among the groups . The trial lasted for a period of ten weeks .

Body gain , feed intake and feed conversion ratio were affected by using DPD containing rations . Growth rate decreased while feed intake increased with increasing its level of inclusion . Feed conversion dencreased by increasing DPD levels especially groups given 12 % and 18 % DPD rations .

Dressing percentage of rabbits fed on DPD containing rations was insignificantly lower than that of the control ration (not significant) . The economic efficiency of 6 % and 12 % DPD containing rations was similar to that of the control ration . The 18 % DPD ration had lower economic efficiency which was about 50 % of the control ration . It can be concluded that , DPD can be used up to the rate of 12 % with satisfactory results and with no adverse effect on body gain , feed conversion and economical efficiency .

key words : Rabbits , Dried Pigeon dropping, Dressing and Economic efficiency .

INTRODUCTION

The shortage of protein resources for feeding poultry has led to finding out untraditional resources of prateion . Animal proteins is essential and form the most expensive part in the rations of poultry Poultry manure is one of the proteins which considered to be less expensive proteins . Though, its EAA contents may suggest that it is a valuable prtein resource .

The metabolizable energy content of the dried poultry manure has been estimated to be from 792 to 1350 K Cal / Kg. Fontenot and Webb (1975) did not find any causes of disease if DPD produced under good sanatory conditions . They reported that a sunny period of 3 weeks can destroy the pathogenic effect .

The nutritive value of poultry droppings is dependent on producing species , age of waste , feeding plan of producing animal , housing and management system and handling , storage and processing of waste (Smith, 1981) . Also , the economic evaluations will carry more weight in decisions made by poultry producers.

The pigeon droppings could have similar advantages as poultry manure . The present experiment was therefore conducted in order tp study the possibility of using this waste to replace a part of the dietary protein sources of grouing New Zealand White rabbits

MATERIAL AND METHODS

Preparation of dried pigeon droppings : The droppings of local pigeon breeders , at Fayoum-Egypt , were gathered . These droppings were spread in a thin lauer on the roof of the farm building and were sun dried for 3 weeks which may be enough to destroy the pathogenic organisms as reported by Fontenot and webb (1975) . The envrinmental temperature at that time vried from 270 to 320 . The dried pigeon droppings (DPD) were ground and stored for a period during which the routine chenical analysis of DPD was made (A. O. A. C. , 1965) .

Effect of dried pigeon droppings on the performance of rabbits :

The rabbits were assigned equally to 4 groups of 10 each and the animals were individually housed in metal cages . The rabbits at the start of hte experiment were at 5 weeks of age . Each group was offered one of the four rations which presented in Table 1 . The feeding trial carried out for ten weeks during which the rabbits were weighed at weekly intervals . The rations were isocaloric and isonitrogenous . The animals were fed ad- libitum on the four rations containing o , 6 , 12 and 18 % DPD. In the supplemented rations , DPD mainly added to replace the preoteins deducted from that offered , thus the feed intale of each group was calculated .

At the end of the experiment , three rabbits from each group were killed and the dressing percentage was obtained . An economical evaluation on growth rate was carried out as folllows :

1- Total revener , L. E. = Total gain X Local price per Kg live body weight (5.0 L. E.)

2- Net revener , L. E. = Total revenur - Feed cost =N.R.

3- Economic efficiency $= \frac{\text{N. R.}}{\text{T. R. - N. R.}} = \text{E.E.}$

4-Relative economical efficiency = $\frac{\text{E.E. of treatments other than the control}}{\text{E. E. of the control group}} \times 100$

Table 1. The composition of the rations used throughout the experiment and their chemical analysis .

Ingredients	Dried pigeon droppings (DPD) levels . %			
	Control	6	12	18
Groud corn	20	20	20	20
Barley meal	20	20	20	20
Wheat bran	15	15	15	15
Soya bean meal	13	13	12	12
Corn gluteen	20	17	13	7
Cotton seed meal	5	2	1	1
DPD	--	6	12	18
Fish meal	3	3	3	3
Molasses	1	1	1	1
Cooking oil	1	1	1	1
Limestone meal	1	1	1	1
Common salt	0.5	0.5	0.5	0.5
Vit. mix.	0.2	0.2	0.2	0.2
Min. mix,	0.3	0.3	0.3	0.3
Total	100.0	100.0	100.0	100.0
Chemical analysis :				
(on dry matter basis)				
DE, Kcal / Kg	3211	3118	3021	2937
Crude protein, %	18.4	17.6	17.2	17.8
Crude fibre, %	7.6	6.9	7.6	7.2
Ether extract, %	6.2	4.8	5.5	5.8
Nitrogen free	59.9	61.7	59.2	57.1
extracts (NFE), %				
Ash, %	7.9	9.0	10.5	12.1

.Dietary energy content has been estimated according to the Notional Research Council values for rabbit feeds (1977) .

The significance of the differences between the obtained data for the four groups was statistically tested using analysis of variance after Steel and Torrie (1980) .

RESULTS AND DISCUSSION

The chemical analysis of the dried pigeon droppings in Table 2. It is shown that the DPD has reasonable amounts of protein , carbohydates and minerals . Moderate amount of ether extract were also found . The nutritive value of DPD is similar to that of dried poultry manure reported by Aly and Hassouna (1985) on leying hens and by Ekpenyong and Biobaku (1986) on rabbits . Howver , the chmeical composition of DPD varied than that reported by these authors. these differences are due to various reasons among ehich are age , stain , type of feeding and stage of produdivity (Smith, 1981) .It is obvious to state that all those factors affect the digestion process which in turn reflects upon the chemical analysis of the animal manure .

The body weight gain, feed intake and feed conversion ratio of rabbits fed rations containing various levels of DPD are included in Table 3 .

It is shown that the average body gain of rabbits given rations containing 6 % and 12 % DPD were statistically similar to that of rabbits fed on the control ration . Feeding rabbits on ration containing 18 % DPD signigicantly (P 0.01) decreased body gain. The same trend was observed with feed efficiency, was not signigicantly differed among rations containing 6% , 12 % and 18 % DPD compared with the control ration . The group receiving 18 % DPD recorded the lowest value .

Statistical analysis showed that the performance of rabbits fed on rations containing up to 12 % DPD was similar . However , it is indicated that the response of 18 % DPD fed group to the increased levels of DPD was statistically lower (P 0.01) than lower levels of inclusion . The DPD was capable to mantain gain up to 12 % of inclusion .The dried poultry manure supplied appreciable amounts of essential amino acids (Couch , 1974)The lower energy content of DPD which suppose to be as dried poulyry manure (the ME of DPD has been estimated to be from 792 - 1350 KCal/ Kg) has led to an increase in feed intake .

Ekpenyong and Biobaku (1986) found that the feed conversion for the dried poultry waste was superior to the control diet . However, the mean daily gain of rabbita fed on poultry droppings was dimilar for groups containing droppings up to 25 % inclusion (Martina, et al, 1987)

Table 2 . Chemical analysis of the dried pigeon droppings , on dry matterbsis .

Dried pigeon protein	Dry matter	Crude protein	Ether extract	Nitrogen free extr.	Crude fibre	Ash
DPD	89.0	26.2	4.2	28.9	20.9	19.8

The moisrure content is 11.0 %

Data in Table 4 .have shown that the dressing percentage of rabbits fed on dried poultry droppings was strikingly similar to that of the control ration . With increasing DPD levels , there was slight decrease in dressing percentage values . The rations were isocaloric which did not led to significant differeces in dressing. Similar result was reported by Martina, et al (1987) .

They found that slaughter productibity was not affected by 5 % poultry droppings . Mortality rate was not affected by inclusion of DPD , One rabbit died from 12 % DPD containg ration which was caused by natural death and not to feeding regime . Drying poultry wastes for asunnt period of 3 weeks can destroy the pathogenic effect and hence could be safe in animal feeding (Fontenot and webb, 1975) .

Tble 3. Performance data of rabbits fed on dried pigeon droppings .

Item	DPD levels (%)			
	Control	6	12	18
Initial weight, g	1064 +74	1156 +198	1076 + 152	1121 + 138
Final weigh, g*	$2219 +166^{a}$	$2354 +166^{a}$	$2170 + 305^{ab}$	$2070 + 204^{b}$
Total gain, g**	$1155 + 270^{a}$	$1198 + 217^{a}$	$1098 + 280^{a}$	$949 + 295^{b}$
Feed intake, g**	5867^{a}	6555^{bc}	5976^{ab}	6598^{c}
FCR** (Feed / Gain)	5.1^{a}	5.5^{b}	5.8^{b}	7.0^{b}
Growth rate, %	109.1	108.8	105.7	87.3

a,b in the same line are significant : * at p 0.05 and ** at p 0.01 .

Table 4 . Slaughter test data of rabbits fed on dried pugeon deoppings .

Item	DPD levels (%)			
	Control	6	12	18
Live body weight,	1685 + 90	1694 + 82	1672 + 77	1675 + 70
Dressed weight, g	80 + 70	891 + 106	859 + 75	855 + 35
Dressing, %	52.2 + 1.3	52.6 + 1.5	51.4 + 1.8	51.0 + 1.9
Heart, %	0.2 + 0.02	0.2 + 0.06	0.3 + 0.06	0.2 + 0.01
Liver, %	2.7 + 0.3	2.7 + 0.2	2.5 + 0.2	2.7 + 0.1
Dressing, %*	55.1 + 1.1	55.5 + 1.2	54.2 + 1.1	53.9 + 1.3

Dressed weight is the weight of the carcass after bleedng and removal of the head, skin, feet and prgans .

Rabbits were slaughteed at 15 weeks old .

* This figure is afrer adding the percentages of liver and heart to carcass weight .

Regarding the economic evaluation (Table 5), the price / Kg feed decreased by increasing the level of DPD . However the total consumed feed cost was similar among the experimental groups . This phenomena was due to the slight increase in feed intake by increasing DPD dietary levels . The economical efficiency and relative efficiency for 6 % and 12 % DPD containg rations did not differ greatly than the control. The 18 % DPD included ration showed a great decrease of about 50% than the control ration.

Table 5 . The economical evaluation of body gain of rabbits fed on dried pigeon droppings

Item	DPD levels (%)			
	Control	6	12	18
Total feed intake, g	5867	6555	5976	6598
Price / Kg feed P.T.	64.4	62.1	59.4	57.3
Total feed cost, L.E.	3.78	4.07	3.55	3.78
Total gain,Kg	1.155	1.198	1.094	0.949
Total revenue, L. E.	5.78	5.99	5.47	4.75
Net revenue, L. E.	2.0	1.92	1.92	0.97
Economic efficiecy. L. E.	53	0.47	0.54	0.26
Relative E. E. @ %	100.0	88.7	101.9	48.6

According to the price of different ingredients available in Egypt .

The local price of kg live gain assumed to be 5.0 L. E. at the experi.

@Assuming that the relative E. E. of group one (control) equqls 100

As a conclusion, the obtained results herein showed that the inclusion of DPD up to 12 % in rabbit rations has no decreasing effect on neither growth performance, dressing percentage and nor on economic efficiency . However, using DPD at level of 18 % resulted statistically in deterimental effect on body gain, feed conversion and economic efficiency . Coach (1974) reported that when DPM exceeds a level of 15 % or more, may had adverse effect do to the increasing levels of uric acid which is not utilized and may be toxic .

Further studies on the possibility of adding dried pigeon dropping as an pigeon protein waste, after seperating the true protein fraction by participation, will be of great value .

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