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EFFECT OF DIETARY PROTEIN LEVEL AND N-FAC 1000 SUPPLEMENTATION ON PERFORMANCE, DIGESTIBILITY AND CARCASS IN GROWING JAPANESE QUAIL

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ABSTRACT

This experiment included 240 one-day old growing Japanese quail, divided randomly into 6 groups, which were subdivided into two replicates with 20 chicks each. Chicks were fed from one day to six weeks of age diets contained 20 % crude protein for the first three groups and 24% for the other (4 – 6) groups. Each diet was supplemented with 0 , 1.0 or 1.50 g N-FAC 1000 / Kg diet in a 2x3 factorial design to evaluate their influences on the performance, digestibility, carcass and some blood constituents of growing Japanese quail. Results obtained revealed that increasing protein level from 20 to 24 % significantly improved the growth performance, carcass weights and economic efficiency. N-FAC 1000 supplementation improved the above parameters as well as the crude protein digestibility, total blood protein and albumin. Significant improvement was also recorded due to the interaction between dietary protein and N-FAC supplementation. However the better improvement was obtained by using the lower level of dietary crude protein.
Keywords: Dietary protein, N-FAC 1000, quail, performance, digestibility, carcass, blood constituents.

INTRODUCTION

The importance of feed supplementations in poultry prodution has increased in the last years with the aim of improving the economic situation of poultry projects.

Use of antibiotics in poultry feeds has improved growth and feed efficiency. This finding has resulted in much attention being directed toward the improvement of nutrient utilization. Their side-effects, however, include development resistant populations of bacteria as well as the intestinal upsets which often follow oral treatment. These side-effects made the subsequent use of antibiotics for therapy a difficult challenge, hence, produced a climate in which both consumers and manufacturers are looking for alternatives. Probiotics are being considered as a substitute and already some farmers are using them in preference to antibiotics (Makled, 1991).

Several researchers (Kumprecht *et al.,* 1995 and Zeweil *et al.,* 1996) have investigated the beneficial effects of feeding microbial cultures to poultry as a possible alternative to antibiotics for growth promotion and improvement of feed efficiency.

The aim of this study was to evaluate the effect of N-FAC 1000 supplementation on growth performance, digestibility, carcass and some blood constituents of growing Japanese quail.

MATERIALS AND METHODS

The present experiment which lasted six weeks was carried out at the Poultry Research Laboratory, Faculty of Agriculture (Saba Basha), Alexandria University during the period from 15. 10 1998 to 30. 11. 1998.

Two hundreds and fourty un-sexed one day old Japanese quail were wing-banded and randomly divided into six groups. Each group was subdivided into two replicates with 20 quail each. Chicks were fed *ad libitum* on fresh weekly mixed diets contained 20 % crude protein for the first three groups and 24 % crude protein for the other (4-6) groups.The experimental feeds were supplemented with the probiotic N-FAC 1000 at levels of 0 , 1.0 or 1.5 g / Kg diet in a 2 x 3 factorial arrangement.

Composition and chemical analysis of basal diets are given in Table (1). N-FAC 1000 is an improved concentrated source of unidentified growth factor (U.G.F.) supplements from fish and fermentation sources composed mainly of (Dried fish solubles, dried extracted streptomyces fermentation solubles and fermentation meal, corn distillers dried grains with solubles and fish meal from Bio-livestock International, Inc., USA). It contains 40.0, 5.0, 8.0 and 8.5% of crude protein, crude fat, crude fiber and moisture, respectively. Chicks were exposed to 24 hrs. of constant light and raised in brooders with wire floors under similar managerial, hygienic and environmental conditions. Birds were Individually weighed at one day old as well as at three and six weeks of age. Feed consumption and mortality during these periods were recorded. At six weeks of age, six birds (three males and three females) from each treatment were randomly chosen, weighed and slaughtered.

Table 1. Composition of the basal experimental diets:

Ingredients	**Dietary Crude Protein**	
	20%	**24%**
Yellow corn	59.80	48.00
Wheat bran	9.30	8.60
Soybean meal (48%)	17.40	28.00
Broiler concentrate (52%)	10.00	10.00
Corn oil	1.50	3.40
Bone meal	1.00	1.00
Salt	0.50	0.50
Vit. And Min. Mix	0.50	0.50
Total	100	100
Chemical Analyses :		
Crude Protein (%)	20.03	24.01
Ether Extract %	3.3	3.1
Crude Fiber %	3.25	3.32
ME Kcal/Kg diet	2900	2901

Provides per kilogram of diets vitamin A (as all-trans-retinyl acetate, 5.500 IU; vitamin E (all nac-α-tocopheryll), 11 IU; menadione (as menadione sodium bisulfite), 1.1 mg; Vit. D_3, 1.100 ICU; riboflavin, 4.4 mg; Ca pantothenate, 12 mg; nicotinic acid, 44 mg; choline chloride, 191 mg; vitamin B_{12}, 12.1 g; vitamin B_6, 2.2 mg; thiamine (as thiamine mononitrate), 2.2 mg; folic acid, 5.5 mg; d-biotin, 11 mg; Trace mineral (milligrams per kilogram of diet): Mn, 60; Zn, 50; Fe, 30; Cu, 5.0; Se, 3.0 .

Blood samples from each bird were collected centrifuged at 3500 r.p.m. for 15 min. and plasma samples were kept at -20°C until analysis. Liver, gizzard, heart and spleen were weighed and recorded as percentage of live body weight. Plasma total protein, albumin, total lipids, cholesterol, alkaline and acid phosphatase activities were assayed by commercial diagnostic kits, Biomerieux – France. Plasma globulin was calculated by the difference between plasma total protein and albumin, since the fibrinogen usually comprises a negligable fraction (Sturkie, 1976).

The digestibility coefficients of nutrients of the experimental diets were determined using six birds at four weeks of age from each treatment. Faecal nitrogen was determined following the procedure outlined by Jakobsen *et al.,* (1960). The proximate analysis of feeds and excreta was carried out according to A.O.A. C.(1990). The economical efficiency of the product was calculated from input-output analysis based upon the differences in both growth rate and feeding cost (Heady and Jensen, 1954). The price of vetrinary services, housing and labor costs were not included as they were the same for all groups.

Data were subjected to statistical analysis using the procedure (SAS, 1994) and Duncan (1955).

RESULTS AND DISCUSSION

Data of the performance of the growing Japanese quail during the period from one day old to six weeks of age as affected by protein level and N-FAC 1000 supplementation are given in Tables 2 and 3. The results showed that dietary protein level significantly ($P \leq 0.01$) influenced body weight and feed conversion ratio when evaluated as a main effect. Body weight and feed conversion ratio of birds fed 24 % crude protein increased significantly than those of birds received 20 % crude protein. The increase in body weight was 34.35 and 38.14 % at 3 and 6 weeks of age, respectively. The corresponding figures for feed conversion ratios were 7.51 and 9.28 % from 0-3 or 0-6 weeks of age, respectively.. These results are in agreement with those of results of Zeweil (1996) who reported that feeding growing japanese quail on a diet cotained a high level of crude protein (24 %) led to a remarkable improvement of growth rate and feed conversion ratio as compared with birds received the lower crude protein level (21 %) .

No significant differences were found in feed consumption among the different dietary treatments (Table 3), but chicks fed the high level of protein consumed slightly less feed than those fed on the lower level of protein in the period from 0-6 weeks of age.

When the effect of protein level was overlooked the results revealed that feed supplementation with 1.0 or 1.5 g N-FAC 1000 / Kg diet significantly increased ($P \leq 0.01$) body weight by 9.5 and 9.8 % at three weeks of age and by 5.7 and 5.8 % at six weeks of age, respectively, than those of the control groups . Also feed conversion ratio improved by 10.1 and 11.5 % throughout the period from 0-3 weeks of age and only by 4.4 and 4.6 % during the period from 0-6 weeks of age, respectively, as compared to control birds.

Table 2: Effect of levels of protein and N-FAC 1000 on growth of growing Japanese quail

Treatment	Trait	Body Weight (g) Initial	Body Weight (g) 3 weeks	Body Weight (g) 6 weeks	Gain (g) 0 – 3 weeks	Gain (g) 3 – 6 weeks	Gain (g) 0 – 6 weeks
Protein Level							
20%		6.53	67.66 b	175.14 b	61.00 b	107.45 a	168.44 b
24%		6.55	90.90 a	188.30 a	84.32 a	97.38 b	181.70 a
Significance		NS	**	**	**	**	**
N Fac 1000;							
0.0 g/kg diet		6.5	74.40 b	174.91 b	67.90 b	100.51 b	168.41 b
1.0 g/kg diet		6.56	81.49 a	184.88 a	74.77 a	103.45 a	178.26 a
1.5 g/ kg diet		6.55	81.70 a	185.03 a	75.31 a	103.24 a	178.55 a
Significance		NS	**	**	**	**	**
Interaction							
20%	**0**	6.48	59.85 e	164.52 d	53.38 d	104.65 b	158.05 d
	1	6.55	70.81 d	180.45 c	64.28 c	109.16 a	173.93 c
	1.5	6.56	71.91 c	179.93 c	65.36 c	108.02 a	173.38 c
24%	**0**	6.53	88.95 b	185.30 b	82.43 b	96.35 c	178.78 b
	1	6.57	91.83 a	189.16 a	85.26 e	97.33 c	182.59 a
	1.5	6.55	91.83 a	190.90 a	85.27 a	98.33 c	183.73 a
Significance		NS	**	**	**	*	**

Values in the same column within each trait with different superscripts vary significantly.
(* = P (≤ 0.05) - ** = P (≤ 0.01) - NS = Non Significant)

Table 3: Effect of levels of protein and N-FAC 1000 on Feed utilization of growing Japanese quail.

Treatment	Trait	Feed consumption G / bird / period 0 – 3 weeks	Feed consumption G / bird / period 3 – 6 weeks	Feed consumption G / bird / period 0 – 6 weeks	Feed conversion 0 – 3 weeks	Feed conversion 3 – 6 weeks	Feed conversion 0 – 6 weeks
Protein Level							
20%		243.37	448.93	692.30	4.02 a	4.18 b	4.12 a
24%		244.50	440.17	684.67	2.91 b	4.52 a	3.77 b
N Fac 1000;							
0.0 g/kg diet		240.33	440.73	681.05	3.70 a	4.40	4.06 a
1.0 g/kg diet		246.10	446.88	692.98	3.36 b	4.33	3.89 b
1.5 g/ kg diet		245.38	446.05	691.43	3.32 b	4.33	3.88 b
Interaction							
20%	**0**	238.70	446.00	684.70	4.47 a	4.27	4.33
	1	246.30	451.85	698.15	3.84 b	4.12	4.02
	1.5	245.10	448.95	694.05	3.75 b	4.16	4.00
24%	**0**	241.95	435.45	677.40	2.94 c	4.53	3.79
	1	245.90	441.90	687.80	2.89 c	4.54	3.77
	1.5	245.65	443.15	688.80	2.88 c	4.50	3.75

Values in the same column within each trait with different superscripts vary significantly.

The 20 % protein diets supplemented with 1.0 or 1.5 g N-FAC 1000 / Kg diet improved feed conversion ratio by 16.4 or 19.2 % in the period from 0-3 weeks of age and by 7.7 or 8.3 % in the period from 0-6 weeks of age. Meanwhile, the corresponding values were 1.7 or 2.1 % and 0.5 or 1.1 % in the case of 24 % dietary protein level supplemented with the two levels of N-FAC 1000, respectively.

Although N-FAC 1000 supplementation significantly improved response of the 20 % protein diet, it was not equal to the birds fed the 24 % protein diet (Table2 and 3). Therefore, N-FAC 1000 supplementation can not replace a 4 % decrease in dietary protein. These results are consistent with those of Ahmed *et al.* (1997), wherein N-FAC 1000 supplemented 14 % protein diet produced lower growth values than unsupplemented 16 % protein diet fed to New Zealand White rabbits.

The achieved results in the present study indicated that viability of growing Japanese quail was not affected by different treatments.

Data presented in Table 4 show the effect of different treatments on carcass and organs characteristics. The differences in dressed carcass weight or organ percentage were insignificant, but the higher dietary protein level and/or the supplementation with different levels of N-FAC 1000 increased significantly ($P\leq 0.01$) the absolute carcass weight. This result is in accordance with those of Woodward *et al* (1988) which indicated that inclusion of virginiamycin as growth promoters increased the carcass yield. Also Tawfeek *et al.* (1993) and Omar (1996) found significant improvement in carcass and total edible parts by probiotics supplementation.

The effect of the different treatments on some blood constituents of growing Japanese quail are presented in Table 5. It could be shown that the level of plasma total protein or albumin of quail fed 1.0 or 1.5 g N-FAC 1000 / Kg diet were significantly ($P\leq 0.01$) higher than the control group by 8.03 and 9.97 % or 12.5 and 6.25 %, respectively, while the differences due to the dietary protein levels were insignificant. These results are in agreement with those of Zeweil *et al.,* (1996) Who reported that plasma protein in quail treated with Fermacto-500 was significantly higher than that of the control groups. It is known that the whole albumin and most of globulin are formed intrahepatically, whereas, partial globulin formation happens extrahepatically (Sorenson, 1982). Increasing plasma albumin, therefore may reflect an increase in the hepatic funcation of quail treated with N-FAC 1000. This means that N-FAC 1000 may increase the metabolic rates of growing Japanese quail. El-Maghowry *et al.* (1993) reported that supplementation with Bospro at the level of 2.5 g / Kg feed increased significantly the total serum protein by 26.9 % and the total thyroxine (T4) by 31.7 % over the control group. Habeeb *et al.* (1989) stated that the increase of (T4) stimulated protein synthesis.

The total plasma lipids, cholesterol, globulin, alkaline phosphatase and acid phosphatase were insignificantly affected by both protein level or N-FAC 1000 supplementation. However, total lipids and cholesterol tended to be lower in birds treated with N-FAC as compared to the control birds.

Table 4: Effect of levels of protein and N-FAC 1000 on carcass characteristics of growing Japanese quail

Trait / Treatment		Carcass Weight (g)	Carcass %	Liver %	Heart %	Gizzard %	Intestine %
Protein Level							
20%		128.72 b	73.37	2.78	0.84	2.80	4.96
24%		139.58 a	73.47	2.80	0.87	2.70	4.96
N Fac 1000;							
0.0 g/kg diet		129.10 b	73.68	2.78	0.85	2.79	4.78
1.0 g/kg diet		136.82 a	73.73	2.78	0.83	2.71	4.73
1.5 g/ kg diet		136.53 a	73.60	2.80	0.88	2.75	4.58
Interaction							
20%	0	121.47 d	73.49	2.80	0.87	2.88	4.83
	1	132.97 c	73.39	2.78	0.81	2.72	4.67
	1.5	131.73 c	73.24	2.76	0.83	2.80	4.58
24%	0	136.73 b	73.87	2.76	0.83	2.70	4.73
	1	140.67 a	74.07	2.79	0.86	2.70	4.78
	1.5	141.33 a	73.97	2.84	0.92	2.70	4.57

Values in the same column within each trait with different superscripts vary significantly.

Table 5: Effect of levels of protein and N-FAC 1000 on plasma constituents of growing Japanese quails.

Trait / Treatment		Total Protein g%	Alb. g%	Glob. g%	Total Lipid mg%	Choles. Mg%	Alk. Phos. IU%	Acid Phos. IU%
Protein Level								
20%		3.83	1.69	2.1	2.15	142.57	50.73	5.45
24%		3.86	1.71	2.2	2.21	132.33	50.97	4.99
N Fac 1000;								
0.0 g/kg diet		3.61 b	1.6 b	2.1	2.31	142.32	51.00	5.07
1.0 g/kg diet		3.90 a	1.8 a	2.2	2.15	137.45	53.14	5.73
1.5 g/ kg diet		3.97 a	1.7 a	2.2	2.07	132.59	48.41	4.87
Interaction								
20%	0	3.58	1.54	2.0	2.28	151.43	48.62	5.34
	1	4.00	1.80	2.2	2.08	129.40	52.77	6.47
	1.5	3.93	1.73	2.2	2.09	146.87	50.80	4.53
24%	0	3.64	1.59	2.1	2.34	133.20	53.38	4.80
	1	3.92	1.79	2.1	2.22	145.50	53.50	4.98
	1.5	4.00	1.75	2.3	2.06	118.30	46.02	5.20

Values in the same column within each trait with different superscripts vary significantly.

Matyka *et al.* (1992) found that increasing protein level in the diets did not significantly affect biochemical blood components.

Quail fed diets containing N-FAC 1000 were more efficient (P≤ 0.01) in digestion of crude protein than the control (Table 6), while no significant effects were found on the digestibility of ether extract, crude fiber and nitrogen free extract. Also the achieved results revealed that protein levels did not show any significant effect on digestibility coefficients of the different nutrients under study. The positive response in protein digestibility due to N-FAC 1000 could be attributed to the increased activity of proteolytic enzymes in the small intestine. Wojcik and Plaur (1983) and Boisen *et al.* (1985). Dhingra (1993) explicated that probiotics regulate the microbial environment of intestine, decrease digestive disturbances, inhibit pathogenic intestinal microorganisms and improve efficiency of feed utilization.

The effectiveness of supplementation different levels of N-FAC 1000 to the basal diet could be explained by improvement in digestibility of crude protein and / or increasing protein synthesis.

Table 6: Effect of levels of protein and N-FAC 1000 on the digestibility Coefficients of growing Japanese quail

Treatment	Trait	Digestibility Coefficients %			
		Crude Protein	Crude Fiber	Ethere Extract	Nitrogen Free Extract
Protein Level					
20%		87.69	17.09	74.52	79.17
24%		87.94	17.33	74.44	78.93
N Fac 1000;					
0.0 g/kg diet		86.42 b	16.92	73.60	78.45
1.0 g/kg diet		88.61 a	17.64	74.89	79.37
1.5 g/ kg diet		88.42 a	17.07	74.96	79.33
Interaction					
20%	0	86.08	16.67	74.18	78.31
	1	88.51	17.52	74.71	79.77
	1.5	88.46	17.08	75.68	79.44
24%	0	86.75	17.17	74.01	72.60
	1	88.71	17.76	75.07	78.97
	1.5	88.38	17.06	74.24	79.21

Values in the same column within each trait with different superscripts vary significantly.

Regarding the economical evaluation of the dietary protein level or N-FAC 1000 supplementation, there was an economic benefit due to increasing the dietary protein level or the supplementation of N-FAC 1000 (Table 7). A higher economic efficiency was recorded with 24 % protein diet than that with 20 % and the increase was to the extent of 4.6 %. Irrespective of protein level, the economic efficiency due to the supplementation of the probiotic N-FAC 1000 was improved by 8.01 % with both of 1.0 or 1.5 g N-FAC 1000 / Kg diet compared to the basal diet (without supplementation). Therefore, it would be recommended to use N-FAC 1000 at 1.0 g / Kg diet.

In conclusion, the supplementation of growing Japanese quail diet with 1.0 g N-FAC 1000 / Kg diet is enough to improve its nutritive value which lead to increased body weight gain, improved feed conversion ratio and a better economic efficiency.

REFERENCES

Ahmed, M.H., H. S. Zeweil, O. M. Barbary and Safinaz M. Shawkat (1997). Influence of dietary protein levels and probiotics on growth performance, digestibility and carcass quality of growing rabbits. J. Nutrition and Feeds I (Special Issue) : 253-271.

A.O.A.C. (1990). Association of Official Analytical Chemists (1990) “Official Methods of Analysis” 15 th Ed., Published by the A. O. A. C., Washington, D. C., USA.

Boisen, S. N., S. Agergaard, L. Rotenberg and Z.Porakragelund (1985). Effect of gut flora on intestinal activities of trypsin, chemotrypsin elastase and amylase in growing rats fed purifid diets with cellulose, pectin or sand. Zotier Physiology, Tierernahr and futter mittelkde, 53 : 245-254.

Dhingra, M.M. (1993). Probiotics in poultry diet. Poultry Adviser 26 (8):43-45.

Duncan,D.B.(1955). Multiple range and Multiple F-test, Biometrics 11: 1-42.

El-Maghawry, A.M., M.I. Tawfeek and A.A. Habeeb (1993). Growth, liver and kidney function and carcass traits of rabbitsas affected by supplementation with Bospro, under conditions of Egypt. Egypt. J. of Rabbit Sci., 3(1): 1-11.

Habeeb, A.A., M.S. Ayyat and S.M. Basiuny (1989). Thyroid function, some blood constituents and fattening performance of rabbits as affected by thyroxine treatments. Third Egyptian-British Conf. Anim., Fish and Poultry Production, Alex.,Egypt, Vol. (2): 1017-1025.

Heady, E.O. and H.R. Jensen (1954). Farm Management. Economics. Prentic-Hall, Inc. Englewood Cliffs, N. J.

Jakobsen, P.E., S. G. Kirston and H. Nelson (1960). Fordgeligheds forgnied fjerbrage. “Digestibility Traits with poultry” 332 bretning fra labratoriet Udgivet statens. Husdybug Sudvalg-Kobenhann.

Kumprecht, I. , P. Zobac, Z. Gasnarek and E. Robosova (1995). The effect of cotinuous application of probiotic preparations based on *Saccharomyces Cerevisiae* var. *elipsoideus* and *Streptococcus faecinm* C-68 (SF 68) on chicken broilers yield. Nutr. Abst. And Rev., Vol. 65: 3060.

Makled, M. N. (1991). The potentials of probiotics in poultry feeds. A Review. Proceeding of the 3rd Scientific Symposium for Animal, Poultry and Fish Nutrition. Animal Production Res. Inst., Sakha, Kafr El-Sheikh, Egypt. 54-68.

Matyka, S., G. Bogusz and W. Korol (1992). Effect of increasing protein and energy level in DKA feed mixtures on performance of broiler chicks. Biuletyn Informacying przemyslu paszowego, 31 (3): 37-49.

Omar, A. S. (1996). Bioprotein in feeding broiler chicks. M.Sc. Thesis, Fac. Agric. Zagazig University.

Richmond, W. (1973). Clin.Chem., 19: 1350 C. F. Clinical Chemistry Bio. Merieux, Laboratory Reagents and Products. 1983, Paris.
SAS Institute (1994). SAS R User's Guide: Statistics Version 6.04, Fourth edition SAS institute Inc. Cary, NC.
Sorenson, M. J. (1982). Blood circulation and the cardio vascular system. Pp. 14-36. In Duke's Physiology of Domestic Animals. 9th Ed., Comstock Publishing Associates, London.
Sturkie, P.D. (1976). *Avian Physiology* 3rd Ed. Springer Virlog. N.Y. Heidelberg, Berlin.
Tawfeek, M. I., K. A. Yamani, A. A. Rashwan and S. S. Ahmed(1993). Growth performance, carcass traits, and blood constituents in broiler chicks as affected by genotype, dietary protein sources and feed additives. J. Agric. Sci. Mans. Univ. 18 (8): 2279-2289.
Wojcik, S. and K. Plaur (1983). Effect of Zn bacitracin and flavomycin on fattening performance of chicken given diets with different protein and energy contents. Rocznikinaukowe Zootechniki 10: 253-265. From dialog file 50: CAB abstracts database 1984-1987/ NOV.
Woodward, S. A., R. H. Harms, R. D. Miles, D. M. Janky and S.Ruiz (1988). Influence of virginiamycin on yield of broilers fed four levels of energy. Poult. Sci. 67: 1222-1224.
Zeweil, H. S. (1996). Enzyme supplementation to diets of growing Japanese quail. Egypt. Poult. Sci., 16 (III): 535-557.
Zeweil, H. S., A. A. El-Fiky and M. A. Kalamah (1996). Effects of Fermacto-500 *vs* viginiamycin on the performance of growing Japanese quail. Egypt. Poult. Sci., 16(11): 201-220.

تأثير مستوى البروتين ومنشط النمو N-FAC 1000 بالعليقة على أداء النمو ، الهضم ، الذبيحة وبعض صفات الدم بالسمان اليابان النامى

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1 قسم الأنتاج الحيوانى والداجنى (كلية الزراعة –جامعة طنطا)

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استخدم فى هذه الدراسة 240 كتكوت سمان يابانى عمر يوم تم تقسيمها عشوائيا الى ستة مجاميع متساوية ، ثم قسمت كل مجموعة الى مكررتين بكل منها 20 كتكوت . وقد تم تغذية السمان من عمر يوم حتى عمر ستة أسابيع على علف يحتوى على 20 % بروتين خام للمجاميع الثلاث الأولى مقابل 24 % للمجاميع الأخرى (4 –6) ولقد أضيف لكل من هذة العلائق منشط النمو N-FAC 1000 بمعدل صفر ، 1,0 1,5 جم / كجم عليقة وذلك فى تجربة عاملية 3X2 أستهدفت تقييم ودراسة تأثير مستوى البروتين وكذلك أضافة منشط النمو N-FAC 1000 الى العليقة بالنسب السابق ذكرها على النمو ، الهضم، الذبيحة وبعض صفات الدم فى السمان اليابانى النامى .

ولقد أوضحت النتائج أن زيادة نسبة البروتين فى العليقة أدى الى تحسين النمو و وزن الذبيحة المطلق والكفاءة الأقتصادية فى السمان النامى. كذلك فان أضافة مادة N-FAC 1000 الى العليقة حسن الصفات السابقة الذكر بالأضافة الى زيادة معامل هضم البروتين ونسب البروتين والألبيومين فى الدم . ولقد كان التحسن معنويا للتفاعل بين كل من بروتين العليقة ومنشط النمو N-FAC 1000 كما كان التحسن أكثر جدوى نتيجة لأستخدام منشط النمو مع النسبة المنخفضة من بروتين العليقة .

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Table 7: Input – output analysis and Economical efficiency of different treatments

Trait Treatment	Body weight (kg)	Price/kg body wt. (LE)	Total Revenuey Chick (kg)	Total feed intake chick	Rice/kg feed (LE)	Total feed cost/chick (LE)	Fixed chick (LE)	Total Cost chick (LE)	Net revenue (LE)	Economic Efficiency (LE)
Protein level %										
20	0.175	10	1.75	0.692	0.808	0.559	0.5	1.06	0.69	0.65
24	0.188	10	1.88	0.685	0.407	0.621	0.5	1.12	0.76	0.68
N-Fac 1000 level										
0.0 g/kg diet	0.175	10	1.75	0.681	0.585	0.584	0.5	1.08	0.67	0.62
1.0 g/kg diet	0.185	10	1.85	0.693	0.867	0.607	0.5	1.11	0.74	0.67
1.5 g/kg diet	0.185	10	1.85	0.692	0.585	0.612	0.5	1.12	0.74	0.67
Protein X N – FAC 1000 level:										
0	0.165	10	1.65	0.685	0.808	0.553	0.5	1.05	0.60	0.57
1	0.181	10	1.81	0.698	0.826	0.577	0.5	1.08	0.73	0.68
1.5	0.18	10	1.80	0.694	0.835	0.579	0.5	1.08	0.72	0.67
0	0.185	10	1.85	0.677	0.907	0.614	0.5	1.11	0.74	0.67
1	0.189	10	1.89	0.688	0.925	0.636	0.5	1.14	0.75	0.66
1.5	0.191	10	1.91	0.689	0.934	0.644	0.5	1.14	0.77	0.68
The price of 1.0 kg N-FAC 1000 = 18.0 LE										