EFFECT OF LEPTADEN (VET.) ON THE GROWTH OF INTERNAL ORGANS IN BROILER CHICKS

A.K. ISHWAR AND M. MOHSIN
College of Veterinary Sciences,
G.B. Pant University of Agriculture and Technology,
Pantnagar - 263145, India

(Received first in September, 1980 and in acceptable form in September, 1981)

ABSTRACT: Leptaden (Vet.) fed to the broiler chicks of commercial strain from day 5th to 64th of age mixed in the ration at doses varying from 0.25 to 3.00 g/kg feed influenced the growth of internal organs. It increased the weight of heart and liver at 1.0 and 1.5 g dose levels. Kidneys were increased significantly both on absolute as well as percent body weight basis at 0.5 to 2.0 g dose. At very high doses (2.5 and 3.00 g) it reduced the weight of spleen. The drug reduced the weight of crop, proventriculus, gizzard, ceca and pancreas at various doses. However, the intestinal weight was increased significantly ($P<0.05$) at higher doses.

Leptaden (Vet.) has been shown to be galactopoietic in sheep, goats, cows and buffalo (Anjaria and Gupta, 1967; Murty, 1969). Recently Leptaden has been recommended in Poultry industry to promote growth and egg production (Natrajan, 1968). Samal (1974) observed that Leptaden improved the growth of chicken of either sex and helped to attain early maturity in White Leghorn pullets. Available literature indicated that no work has been conducted on the effect of Leptaden in broiler chicks. However, Ishwar and Mohsin (1981) observed that Leptaden improved the body weight and feed conversion ratio in broiler chicks.

MATERIALS AND METHODS

Two hundred day-old broiler chicks of commercial strain vaccinated against Ranikhet and Marek's Disease were equally divided into eight groups and kept in battery brooders upto 6 weeks of age. The birds were fed on starter ration ad lib., either plain or mixed with drug. They were supplied with vitamins, antibiotics and deworming agents as per standard practices. At the age of 45 days the chicks of all groups were switched over to finisher ration (Ishwar and Mohsin 1981). Powdered Leptaden was mixed in the ration of the treated groups @ 0.25, 0.50, 1.00, 1.50, 2.00, 2.50 and 3.00 g per kg feed and given from 5 to 64 days of age.

At the age of 64 days, the birds were sacrificed after recording their body weight, by decapitation and opened immediately. Their visceral organs like liver, lungs, kidneys and spleen were dissected out and cleaned off from extraneous tissues. Gall bladder was removed from the liver. Organs of the digestive tract like crop, proventriculus, gizzard, intestine and ceca were dissected out, opened and their contents were washed out thoroughly with running water. The organs were kept in petri-dishes submerged in normal saline till weighed. Before weighing, individual organ was dried on a filter paper. Absolute weight of individual organ and percent weight in relation to body weight were recorded. The data were statistically analyzed by the method of Snedecor and Cochran (1967).

RESULTS AND DISCUSSION

Absolute and percent weight in relation to body weight of organs have been shown in Table 1 and correlation coefficient between body weight and visceral organs have been given in Table 2.

Ref: Indian J. Poult. Sci. (1981) 16, 301-306
Research paper no. 2167

Table 1: Effect of Leptaden on growth of visceral organs of broiler chicks at the age of 64 days (Average weight in g ± SEM)

Absolute Weight							
Body/Organs	**Control group**	**Treated groups (Lentaden g/kg feed)**					
		0.25 (I)	**0.50 (II)**	**1.00 (III)**	**1.50 (IV)**	**2.00 (V)**	**2.50 (VI)**	**3.00 (VII)**
Body	1,182.59 ± 47.15	1,243.89 ± 47.15	1,353.39 ± 47.15	1,386.00 ± 47.15	1,391.50 ± 47.15	1,324.69 ± 47.15	1,131.00 ± 47.15	1,043.90 ± 47.15
Heart	4.71 ± 0.25	4.63 ± 0.25	4.59 ± 0.25	5.42* ± 0.25	5.29 ± 0.25	4.90 ± 0.25	4.18 ± 0.25	4.09 ± 0.25
Liver	25.31 ± 1.20	26.07 ± 1.20	26.23 ± 1.20	27.76 ± 1.20	28.81* ± 1.20	26.58 ± 1.20	21.14 ± 1.20	22.85 ± 1.20
Lungs	7.09 ± 0.55	6.40 ± 0.55	8.01 ± 0.55	5.47 ± 0.55	7.36 ± 0.55	6.40 ± 0.55	5.77 ± 0.55	6.08 ± 0.55
Kidneys	7.86 ± 1.08	6.34 ± 1.08	10.72* ± 1.08	11.73* ± 1.08	11.41* ± 1.08	10.03* ± 1.08	7.84 ± 1.08	7.16 ± 1.08
Spleen	1.09 ± 0.07	0.99 ± 0.07	1.02 ± 0.07	1.29 ± 0.07	1.20 ± 0.07	1.04 ± 0.07	0.76* ± 0.07	0.82* ± 0.07
Crop	3.98 ± 0.27	4.21 ± 0.27	4.41 ± 0.27	4.71 ± 0.27	4.38 ± 0.27	3.91 ± 0.27	4.00 ± 0.27	4.71 ± 0.27
Proventriculus	4.16 ± 0.21	4.09 ± 0.21	3.90 ± 0.21	4.55 ± 0.21	4.07 ± 0.21	4.03 ± 0.21	3.34* ± 0.21	3.73* ± 0.21
Gizzard	25.43 ± 1.64	25.70 ± 1.64	26.73 ± 1.64	29.18 ± 1.64	27.67 ± 1.64	29.02 ± 1.64	23.20 ± 1.64	23.72 ± 1.64
Intestine	23.67 ± 1.37	24.34 ± 1.37	24.25 ± 1.37	27.35* ± 1.37	27.33* ± 1.37	27.27* ± 1.37	18.83* ± 1.37	22.82 ± 1.37
Ceca	5.03 ± 0.27	4.88 ± 0.27	4.91 ± 0.27	5.35 ± 0.27	5.29 ± 0.27	4.74 ± 0.27	3.90** ± 0.27	4.54 ± 0.27
Pancreas	2.14 ± 0.09	2.16 ± 0.09	2.35 ± 0.09	2.23 ± 0.09	2.45 ± 0.09	2.36 ± 0.09	1.99* ± 0.09	2.05 ± 0.09
Percent of Body Weight								
Body/Organs	**Control group**	**Treated groups (Lentaden g/kg feed)**					
		0.25 (I)	**0.50 (II)**	**1.00 (III)**	**1.50 (IV)**	**2.00 (V)**	**2.50 (VI)**	**3.00 (VII)**
Heart	0.40 ± 0.02	0.38 ± 0.02	0.33 ± 0.02	0.39 ± 0.02	0.38 ± 0.02	0.36 ± 0.02	0.37 ± 0.02	0.40 ± 0.02
Liver	2.15 ± 0.09	2.11 ± 0.09	1.93 ± 0.09	2.00 ± 0.09	2.07 ± 0.09	2.00 ± 0.09	1.86 ± 0.09	2.25 ± 0.09
Lungs	0.59 ± 0.02	0.59 ± 0.02	0.59 ± 0.02	0.59 ± 0.02	0.53 ± 0.02	0.55 ± 0.02	0.51 ± 0.02	0.58 ± 0.02
Kidneys	0.75 ± 0.03	0.75 ± 0.03	0.79 ± 0.03	0.77 ± 0.03	0.82 ± 0.03	0.75 ± 0.03	0.69 ± 0.03	0.79 ± 0.03
Spleen	0.09 ± 0.006	0.08 ± 0.006	0.07 ± 0.006	0.08 ± 0.006	0.09 ± 0.006	0.07 ± 0.006	0.07 ± 0.006	0.08 ± 0.006
Crop	0.33 ± 0.02	0.33 ± 0.02	0.32 ± 0.02	0.33 ± 0.02	0.31 ± 0.02	0.28* ± 0.02	0.34 ± 0.02	0.45 ± 0.02
Proventriculus	0.35 ± 0.01	0.32 ± 0.01	0.28 ± 0.01	0.32 ± 0.01	0.29 ± 0.01	0.30 ± 0.01	0.28* ± 0.01	0.36 ± 0.01
Gizzard	2.15 ± 0.09	2.06 ± 0.09	1.97** ± 0.09	2.09 ± 0.09	1.98** ± 0.09	2.17 ± 0.09	2.01 ± 0.09	2.26 ± 0.09
Intestine	2.01 ± 0.08	1.97 ± 0.08	1.78 ± 0.08	1.98 ± 0.08	1.95 ± 0.08	2.05 ± 0.08	1.63 ± 0.08	2.19 ± 0.08
Ceca	0.42 ± 0.09	0.39 ± 0.09	0.35 ± 0.09	0.38 ± 0.09	0.37 ± 0.09	0.38 ± 0.09	0.33** ± 0.09	0.43 ± 0.09
Pancreas	0.17 ± 0.01	0.17 ± 0.01	0.16 ± 0.01	0.15 ± 0.01	0.19 ± 0.01	0.16 ± 0.01	0.26** ± 0.01	0.19 ± 0.01

*P<0.05 **P<0.01

Ref: Indian J. Poult. Sci. (1981) 16, 301-306
Research paper no. 2167

Table 2: correlation coefficient between organ and body weight of broiler chicks at the age 64 days

Groups	Heart	Liver	Lungs	Kidneys	Spleen	Crop	Proventriculus	Gizzard	Intestine	Ceca	Pancreas
Control	-0.085	+0.298	+0.741	-0.012	-0.075	+0.201	+0.217	+0.576	+0.208	-0.007	+0.088
Treated											
I	+0.275	+0.703 **	-0.200	-0.394	+0.326	+0.852 **	+0.577	+0.642 **	+0.346	+0.277	+0.370
II	+0.591	+0.275	-0.241	+0.154	-0.196	+0.791 **	+0.284	+0.373	+0.942 **	+0.310	+0.247
III	+0.225	+0.819 **	-0.218	-0.483	+0.234	+0.367	+0.130	+0.625 *	+0.163	+0.576	+0.268
IV	-0.208	+0.746 **	+0.787 **	+0.081	+0.611 *	+0.296	-0.162	+0.481	+0.637 **	+0.452	+0.471
V	+0.588	+0.711 *	+0.134	-0.208	+0.639 **	+0.619	+0.525	+0.523	+0.751 **	-0.380	+0.579
VI	+0.910 **	+0.927 **	+0.908 **	-0.151	+0.621 *	+0.878 **	+0.903 **	+0.839 **	+0.848 **	+0.778 **	+0.249
VII	+0.415	-0.038	+0.859 **	+0.638 *	+0.619 *	+0.121	+0.137	+0.655 *	+0.534	-0.259	-0.069

*P<0.05 **P<0.01

Absolute weight of the heart was significantly (P<0.05) higher in treated group III. No effect was noted on heart weight in other groups. When calculated on the basis of percent of body weight it was observed that the drug had no effect on heart in any of the treated groups. Absolute weight of liver was significantly (P<0.05) higher in group IV whereas in other groups it remained unaffected. Absolute weight of kidneys were higher in treated groups II, III, IV and V and their percent weight was unaffected in all the treated groups. There was no effect on the weight of lungs in any group whereas weight of spleen was significantly (P<0.05) reduced in group VI and VII which were treated with very high doses (2.5 and 3.00 g/kg feed, respectively.

There was no significant effect of the drug on the absolute weight of crop however its percent weight was found to be reduced in group V. The proventriculus was significantly affected (P<0.05) in group VI and VII whereas percent weight of gizzard was reduced significantly (P<0.05) in group VI. The weight of intestine was significantly (P<0.05) increased in groups III, IV and V. Both absolute and percent weight of the ceca was significantly (P<0.01) reduced in group VI. The percent weight of pancreas was increased significantly (P<0.05) in group VI.

The drug has shown significant effect on liver and kidneys indicating that it is probably metabolised in the liver and excreted through kidney showing its maximum effect. The increase in heart weight in the treated birds correlated with increased body weight and feed utilization, thus supplying increased amount of blood to body tissues in fast growing broiler chicks.

REFERENCES

Anjaria, J.V. and Gupta, I. 1967 Studies on the Lactogenic property of Leptadenia reticulata (Jeevanti) and Leptaden tablets in goats, sheep, cow and buffaloes. Indian Vet. J. 44 : 967-74

Ishwar, A.K. and Mohsin, M. 1981, Leptaden (Vet.), a growth promoting agent in broilers. Indian Vet. J.

Murthy, G.N. 1969. A preliminary note on the study of Lactogenic properties of Leptaden. Indian Vet. J. 46 : 510-16

Natrajan, R.T. 1968. Leptaden in poultry. Effect of Leptaden in culled birds, XVIII: Indian Veterinary Conference, Hyderabad

Samal, G.N. 1974. A study of Leptaden (Vet.) therapy on growth, laying performance and disease control of poultry. Indian Poult. Rev. 6 : 351-55

Snedecor, G.W. and Cochran, W.G. 1967. Statistical Methods, 6th edn. Oxford Publishing Co., Calcutta.

Ref: Indian J. Poult. Sci. (1981) 16, 301-306
Research paper no. 2167