THE ROLE OF DIAZEPAM ON BROILER PERFORMANCE UNDER NORMAL AND HEAT STRESS CONDITIONS

EL-TANTAWY S.M.T. [1], FADIA M. NOSSIER[2] , M.A.M.KICKA[1] AND A.A.H.TOLLBA[2]

1 Faculty of Agriculture, Cairo University

2 Animal Production Research Institute, Agricultural research cetre. Ministry of Agriculture, Dokki, Egypt

(Manuscript received 15 June 2002)

Abstract

Three hundred day-old broiler Arbor Acres chicks were assigned to three groups, 100 birds in each, fed with 0.0, 0.5 or 1,0 ppm diazepam under normal condition. At 36 days of age, each group was divided into equal two sub-groups, fifty birds in each. First: still under normal condition, second: exposed to 38 ºC for 4 h to 3 days.

Daizepam sigificanty increased weight gain, improved feed converion and the total plasma protein of broiler chicks with or without heat stress and (T3) with heat stress. The best improvement was obtained with the highest level of diazepam. Diazepam redused the mortality rate, adrenalin hormone with or without heat stress and body temperature, respiration rate with heat stress. Diazepam had slight effect on (T3), respiration rate without heat stress and minimization the increase of body temperature during heat stress. There was significant decrease on weight gain and the total plasma proteins of broiler chicks and significant increase in mortality rate, adrenalin hormone, body temperature, respiration rate, corresponding to heat stress,

INTRODUCTION

Great interest had developed in drugs which exerted a selective effect on behaviour. Diazepam is from of drugs which comprises one of the groups of drugs used as feed additive, and may be involved in feed intake regulation because it has a role on the nervous system. Denbow (1989) stared that the regulation of feed intake in chicken is a complex system involving sites both inside and outside the central nervous system. El-Halawani *et al.*, (1982) used the pharmacological agents (tranquilizers) as a tool to study the neural regulation of avian endocrine function. Yahava and Hurwitz (1996) reported that, exposure to 36°C for six hours resulted in body weight loss by 60g at 42 days of age, and weight gain was more than that of the control. Also, Mckee *et al.*, (1997) found that broilers from 28 to 49 days exposed to heat stress (32°C) resulted 35% decrease in weight gain compared to those exposed to 21°C.

The present experiments were designed to study the effect of diazepam on

broiler performance, some physiological parameters and the blood constituents under heat stress condition.

MATERIALS AND METHODS

The experimental work was conducted at Poultry Research Station at EL-Kanater El-Khiria, Animal Production Research Institute. A total of 300 day- old Arbor Acres broiler chicks were randomly assigned to equal three groups of 100 chicks each, kept under similar normal conditions in floor pens. All groups were fed on commercial diets with 0.0, 0.5 or 1,0 ppm diazepam. Birds were fed starter diet from 1 to 15 days of age and grower diet to 28 days, then, finisher diet to 49 days of age (Table 1). At 36 days of age, each group was divided into equal tow sub-groups, fifty birds in each. First: still under normal condition 22°C, second: exposed to 38° C for 4 to 3 days from 36 to 38 days of age. Body weight gain, feed conversion, mortality rate, body temperature and respitation rate were caluulated at intervals as shown in their tables. Plasma total protein and T_3 were estimated by using commercial Kits (Stambio, San Antonio, Texas, USA). Also adrenalin hormone was determined using radio immunoassay (RIA) kits, IBL, Hamburg, Germany. Data were subjected to statistical analysis using computerized analysis of variance and Duncan's multiple range test procedures within the statistical analysis system (SAS 1994).

RESULTS AND DISCUSSION

1- Productive performance

A- Body weight gain

A shown in Table 2, body weight gain of birds fed diazepam was superior significantly ($P<0.05$) to the control birds at intervals of 21-35, 35-42, or overall with unstress condition. Birds fed diazepam under stress condition increased significantly ($P<0.05$) than unsupplemented birds at intervals of 35-42 or overall. Also, birds fed 1.0 ppm diazepam were significantly higher ($P<0.05$) than birds fed 0.5 ppm at intervals of 35-42 or overall with unstress condition. As evident from 35-42 days or overall data, heat stress resulted dramatic influence on body wieght gain compared with normal rearing birds. The addition of diazepam, at level of 1 or 0.5 ppm ameliorated the negative effect of heat stress on weight gain.

It could be said that the results were in harmony and in good agreement with pervious findings of many workers like Feldman and Quenzer (1948) who reported that diazepam is antianietic agent which potentates the inhibitory effect of the neurotransmitter Gamma Amino Butyric Acid (G.A.B.A) on seratonergic

neurons. Its binding capacity to peripheral tissuses are very low compared to its capacity to brain tissue. El-Wardany *et al.* (1999) and Sabry (1998) reported that growth of chicks may be stimulated when diazepam was added to diet under normal temperature, and slight effect was found under heat stress condition. Also, Mckee *et al.* (1997) found that broilers from 28 to 49 days exposed to heat stress (32°C) resulted in a 35% decrease in weight gain compared to those exposed to 21°C.

B- Feed conversion

Data in Table 3. showed that, supplementation of diazepam had significant effect ($P<0.05$) on feed conversion with unstress condition at intervals of 21-35, 35-42, 42-49 days or due to the overall. Birds fed diazepam under stressed condition improved significantly ($P<0.05$) than unsupplemented birds at intervals of 21-35, 35-42, 42-49 only. There was similaritv in results of groups fed 1.0 or 0.5 ppm diazepam with or without heat stress. We could conclude that the addition of diazepam at levels of 1.5 or 0.5 ppm had a significant decrease on the feed needed to produce unit of body weight gain under normal or heat stress condition.

It could be said that the results were in harmony with pervious findings of many workers. James and long (1987) reported that, the effect of diazepam produced a calming effect by enhancing the action of the nerve transmitter Gamma Amino Butyric Acid (G.A.B.A.) which in turn, blocked the higher brain centers. Singh and Sud (1993) reported that diazepam at 0.15 or 0.30 ppm up to 56 days of age increased body weight gain and improved the feed utilization efficiency. El-Wardany *et al.* (1999) reported that weight gain, feed conversion ratio, efficiency of protein utilization at 6 weeks were improved significantly at dose of 0.5 g diazepam/L drinking water than the control. They attributed these changes to adding diazepam which enhanced feed intake and feed utilizstion of birds by a direct effect on birds thermobalance during hot weather. It may also exert an effect on the food regulating centers in the brain, either, by decreasing serotonin secration or by a main effect on the brain centers.

C- Mortality rate

Data recorded in Table 4 showed that, diazepam supplementation reduced the mortality rate about 50% as compared with the control group during the period of I to 35 or period 35-49 days of age, while, due to heat stress, mortality rate was found to be almost 3 or 4 folds of that obtained by birds fed diazepam. Therefore, we recommend to use diazepam at level of I ppm to broiler diets especially under stressful condition or when ambient temperature is coming high

to minimize the losses due to mortality, and consequenlty, to increase mass production.

It could be said that the action of diazepam in reducing the mortality of birds under normal or heat stress may be due to its properties as antihypertensive agent via its effexts on depleting the tissues stores from catecholamine from the peripheral sites, especially the brian and adrenal medulla which increase the stress tolerance of the birds (James and long 1987). Also, the favourable effects of diazepam on chick mortality may be due to its action as antinietic agent which potentiates the inhibitory effect of the neurotransmitter Gamma Amino Buteric Acid (G.A.B.A) on seratonergic neurons (Morley *et al.*, 1985). The results were in harmony and in good agreement with pervious findings of many workers. Demaziere *et al.* (1992) indicated that, addition of diazepam in diet showed a decreased mortality rate (7.5%) countarpart (12%) for the control group. Borwn (1986) reported that increased mortalities resulted by exposure of broiler chicks to high enviromental temperature. He added that, as environmemtal temperature exceeded 35°C, mortality and morbidity broilers increased substantially.

II- Physiological characteristics

A- Blood constituents

1- Plasma total protein

Results in Table 5 referred that supplementation of diazepam caused significantly higher ($P<0.05$) total protein compared to the unsupplemented control birds under normal or heat stress condition. But, the values of 1 ppm was similar to control or 0.5 ppm values under normal condition. The level of total protien of birds subjected to heat stress was significantly ($P<0.05$) lower regardless of diazepam supplementation. Similar findings were found by El-Wardany *et al.* (1999) who told that there was higher increase in total protein level of birds treated with 0.25, 0.50 and 0.75 g/Liter drinking water of diazepam than those treated with 1.0 g/L or control groups during hot weather. Denbow *et al.* (1981) and Feldman and Quenzer (1984) founf that diazepam tended to increase the total plasma protein, albumin and globulin.

2- Plasma hormones

a- Triiodothyronine hormone (T_3)

Data tabulated in Table 6 showed that, triiodothyronine hormone T_3 had not been altered significantly by diazepam addition; there was slight increase under

normal condition. However, T_3 was significantly ($P<0.05$) higher in diazepam groups than the control at 36 and 37 days during heat stress, but not at 38 days. The triiodothyronine hormone had been (T_3) reduced significantly ($P<0.05$) correspinding to heat stress at 36 days, regardless of diazepam. However, at 37 and 38 days, it was slightly inferior corresponding to heat stress with diazepam addition.

Sabry (1998) stated that, diazepam as a drug, released no significant effects on thyroid relative weight at 4-7 weeks of age. El-Wardany *et al.* (1999) told that T_3 increased significantly ($P<0.05$) in birds drunk 0.50 and 0.75g diazepam /L drinking water with hot weather. They added that, diazepam adminstration would be beneficial in maintaining an euthyroid stauts for birds exposed to high ambient temperature (36.8°C) which depresses the thyroid activity. Also Yahav and Hurwitz (1996) reported that heat expoure 36°C for 24 at 5 days of age caused decline in plasma T_3 concentration after 24 of heat stress at 5 and 21 days of age.

b- Adrenalin hormone

Results in Table 7 showed that, during normal condition, diazepam caused a significant ($P<0.05$) decrease in adrenalin hormone than control. Birds treated with 1.0 ppm diazepam were significantly ($P<0.05$) less in amount of the hormone than 0.5 ppm groups. During heat stress condition, adrenalin hormone increased significantly ($P<0.05$) corresponding to heat stress. Supplementation of diazepam minimizated the increasing of adrenalin hormone corresponding to heat stress. The depression was significant ($P<0.05$) with birds fed 1.0 ppm diazepam than birds fed 0.5 ppm or control. The data revealed that there was dramatic significant increase on adrenalin hormone correspinding to heat stress. The addition of diazepam ameliorated significantly the dramatic increase of adrenalin hormone.

The studies of the diazepam used as tranquilizer on the adrenalin hormone of broiler chicks with or without heat stress are very scanty and rare. It could be said that the results were in harmony with pervious findings of some workers (Gisolfi *et al.* 1999) . Bottje and Harrison (1686) told that, after 50 min of heat stress, plasma epinephrine was significantly greater ($P<0.05$) than preheat stress thermoneutral control.

B- Body temperature

The results in Table 8 revealed that, body temperature of chicks reared under normal condition was decreased significantly ($P<0.05$) when the chicks fed 0.5 or 1.0 ppm diazepam compared with unsupplemented control chicks, while,

heat stress had a significant (P<0.01) increase body temperature. There was a significant (P<0.05) reduce on the third day, whichever, before or after exposure. This may be due to the acclimatization to the high environmental temperature resulting from exposing the birds to the periods of heat (1,2 and 3 days). In genral, it is noticeable from data presented that the addition of diazepam caused minimization of body tenperature after or befor heat stress. Sabry (1998) and Ali *et al,* (1998) reported that, 0.5 mg diazepam or reserpine significantly (P<0.05) decreased rectal temperature of broiler chicks which were exposed to heat stress. El-Wardany *et al.* (1999) reported that, rectal temperature was significantly higher in the control than diazepam groups.

C- Respiration rate

The results in Table 9 showed that no significant differences were found among different treatments under normal condition. However, during heat stress, respiration rate was significantly (P<0.01) increased. Diazepam as a tranquilizer, had significantly (P<0.05) reduced the respiration rate under heat stress.

In this respect, several studies had shown a reverse trend indicating that the respiration rate and body temperature by adding the tranquilizer such as diazepam and reserpine were attainted as early as Sturkie *et al.* (1958) who reported that the general effect of reserpine was similar in birds and in mammals. They added that the dosage required for tranquilization produced a significant depression in body temperature, respiration rate, heart rate and blood pressure. Bottje and Harrison, (1986) told that, after 50 min of heat stress, rectal temperature and respiration rate were significantly greater (P<0.05) than preheat stress thiermoneutral control values.

Table 1. The composition of the experimental diets

INGREDIENTS (%)	STARTER	GROWER	FINISHER
1- Yellow corn	57.40	64.00	72.00
2- Soybean meal 48%	30.10	25.50	0.00
3- Soybean meal 44%	0.00	10.00	18.00
4- Protien Concentrate	0.00	0.50	0.00
5- Sunseed Meal 33%	0.00	0.00	0.00
6- Bone meal	2.60	0.00	0.00
7- Glotofeed 16%	3.50	0.00	0.00
8- Maze glotien 62%	2.64	0.00	0.00
9- Bone and meat meal 55%	2.00	0.00	0.00
10- Oil	1.00	0.00	0.00
11- Salt	0.30	0.00	0.00
12- Vit. Mixture	0.20	0.00	0.00
13- Min. mixture	0.20	0.00	0.00
14- DL-Methionine	0.06	0.00	0.00
Calculated Analysis			
Meteabolizable energy k.cal/kg	3000.00	2,913.00	3,000.00
Crude protein%	23.00	21.00	17.50
Crude fat %	03.10	3.00	3.15
Crude fiber%	02.90	3.00	3.46
C/P	130.00	138.71	171.43

Table 2. Effect of diazepam and/or heat stress on average of body weight gain (g) (Mean± S.E.) of broiler chicks at different ages.

Treatment Periods (days)	Control		Diazepam 0.5ppm		Diazepam 1.0ppm	
1/7	112.00 A ±2.32		114.08 A ±2.27		112.79 A ±2.29	
7/21	415.00 A ±12.00		444.36 A ±8.02		438.12 A ±24.04	
21-35	688.50 A ±19.50		768.18 A ±15.02		799.50 A ±8.50	
36-38	Unstress	Stress	Unstress	Stress	Unstress	Stress
35-42	393.37 CD ±15-74	306.91 E ±17.20	440.47 B ±15.38	363.00 CD ±15.92	520.34 A ±15.56	389.65 CD ±15.38
42-49	365.97 CDE ±20-51	352.33 E ±22.42	417.68 ABCD ±20.05	397.64 CD ±20.67	443.68 AB ±20.28	363.74 DE ±20.05
Overall	1976.30 D ±30.12	1976.47 E ±32.92	2183.80 B ±29.44	2086.47 C ±30.47	2316.84 A ±29.77	2106.44 BC ±29.44

Means with the same letter within row are not significantly different.

Table 3. Effect of diazepam and/or heat stress on the feed conversion (feed g/gain g) (Mean ±S.E.) of broiler chicks at different ages.

Treatment Periods (days)	Control		Diazepam 0.5ppm		Diazepam 1.0ppm	
1-7	1.25 ±0.01 A		1.25 ±0.01 A		1.25 ±0.01 A	
7-21	1.62 ±0.03 A		1.61 ±0.04 A		1.60 ±0.01 A	
21-35	2.10 ±0.02 A		1.94 ±0.02 A		1.98 ±0.02 A	
36-38	Unstress	Stress	Unstress	Stress	Unstress	Stress
35-42	2.56 ±0.01 A	2.41 ±0.01 BC	2.38 ±0.01 CD	2.34 ±0.01 DE	2.34 ±1.01 DE	2.31 ±0.01 E
42-49	2.61 ±0.00 A	2.51 ±0.00 B	2.45 ±0.01 C	2.42 ±0.00 C	2.43 ±0.00 C	2.44 ±0.00 C
Overall	2.12 ±0.02 A	2.08 ±0.02 AB	2.04 ±0.02 B	2.04 ±0.02 B	2.04 ±0.02 B	2.02 ±0.02 B

Means with the same letter within row are not significantly different.

Table 4. Effect of diazepam and/or heat stress on the moratality rate of broiler chicks at different ages.

Treatment Periods (days)	Control		Diazepam 0.5ppm		Diazepam 1.0ppm	
1/1	%		%		%	
	4		2		2	
36-38	Unstress	Stress	Unstress	Stress	Unstress	Stress
35-42	2	16	0	6	0	4
42.49	2	4	2	2	2	2
35.49	4	20	2	8	2	6

Table 5. Effect of diazepam and/or heat stress on the plasma total protein (g/dl) (Mean ±S.E.) of broiler chicks stressed at 36-38 days of age.

Treatment Age (days)	Time of Sampling	Without heat stress			Without heat stress		
		Control	Diazepam 0.5 ppm	Diazepam 1.0 ppm	Control	Diazepam 0.5 ppm	Diazepam 1.0 ppm
36	Before	3.22 B ±0.32	3.74 A ±0.1	3.58 A B ±0.01	3.22 B ±0.32	3.74 A ±0.1	3.58 A B ±0.01
	After	3.22 B ±0.32	3.74 A ±0.1	3.58 A B ±0.01	2.15 C ±0.02	2.13 C ±0.11	2.23 C ±0.04
37	Before	3.22 B ±0.32	3.74 A ±0.1	3.58 A B ±0.01	2.90 B ±0.05	3.39 A B ±0.01	3.12 B ±0.03
	After	3.22 B ±0.32	3.74 A ±0.1	3.58 A B ±0.01	1.74 D ±0.1	2.35 C ±0.04	2.24 C ±0.05
38	Before	3.22 B ±0.32	3.74 A ±0.1	3.58 A B ±0.01	2.94 B ±0.11	3.59 A B ±0.02	3.08 B ±0.08
	After	3.22 B ±0.32	3.74 A ±0.1	3.58 A B ±0.01	1.73 D ±0.43	2.45 C ±0.04	2.19 C ±0.03

Means with the same letter within row are not significantly different.

Table 6. Effect of diazepam and/or heat stress on the plasma Triiodothyronine hormone (T_3) (ng/dl) (Mean ±S.E.) of broiler chicks stressed at 36-38 days of age.

Treatment Age (days)	Time of Sampling	Without heat stress			Without heat stress		
		Control	Diazepam 0.5 ppm	Diazepam 1.0 ppm	Control	Diazepam 0.5 ppm	Diazepam 1.0 ppm
36	Before	215.11 A B C ±24.98	236.27 A B ±52.24	245.75 A ±7.78	215.11 A B C ±24.98	236.27 A B ±52.24	245.75 A ±7.78
	After	215.11 A B C ±24.98	236.27 A B ±52.24	245.75 A ±7.78	100.75 E ±4.420	172.73 CD ±1.86	178.34 CD ±1.89
37	Before	215.11 A B C ±24.98	236.27 A B ±52.24	245.75 A ±7.78	222.93 A B C ±25.705	224.92 A B C ±16.67	220.26 ABC ±7.78
	After	215.11 A B C ±24.98	236.27 A B ±52.24	245.75 A ±7.78	106.61 E ±2.07	172.52 CD ±2.27	185.91 ABC ±3.92
38	Before	215.11 A B C ±24.98	236.27 A B ±52.24	245.75 A ±7.78	191.75 A B C D ±5.57	209.46 A B C ±18.76	195.86 ABCD ±0.50
	After	215.11 A B C ±24.98	236.27 A B ±52.24	245.75 A ±7.78	148.31 DE ±10.95	170.39 CD ±1.49	187.17 BCD ±1.41

Means with the same letter within row or column are not significantly differ-

Table 7. Effect of diazepam and heat stress on the plasma adrenalin hormone (ng/ml) (Mean ±S.E.) of broiler chicks stressed at 36-38 days of age.

Treatment· AGE (Day)	36		37		38	
Time of Sampling	Before	After	Before	After	Before	After
Control	0.4550 D ±0.023	0.9225 A ±0.023	0.4900 CD ±0.023	0.8750 A ±0.023	0.5000 CD ±0.023	0.8950 A ±0.023
Diazepam 0.5 ppm	0.3750 H ±0.023	0.7050 B ±0.023	0.4400 GH ±0.023	0.5515 CD ±0.023	0.4600 EF ±0.023	0.5200 DEF ±0.023
Diazepam 1.0 ppm	0.2050 G ±0.023	0.5305 CDEF ±0.023	0.2950 I ±0.023	0.5015 DEFG ±0.023	0.3050 I±0.023	0.5350 CDE ±0.023

Means with the same letter within row or column are not significantly differ-

Table 8. Effect of diazepam and/or heat stress on the body temperature (°C) (Mean ±S.E.) of broiler chicks stressed at 36-38 days of age.

Treatment Age (days)	Time of Sampling	Without heat stress			Without heat stress		
		Control	Diazepam 0.5 ppm	Diazepam 1.0 ppm	Control	Diazepam 0.5 ppm	Diazepam 1.0 ppm
36	Before	40.35 FG ±0.04	40.21 GH ±0.04	40.27 FG ±0.04	40.35 FG ±0.04	40.21 GH ±0.04	40.27 FG ±0.04
	After	40.35 FG ±0.04	40.21 GH ±0.04	40.27 FG ±0.04	41.86 CD ±0.04	41.77 CD ±0.04	41.63 DE ±0.04
37	Before	40.35 FG ±0.04	40.21 GH ±0.04	40.27 FG ±0.04	40.11 HI ±0.04	40.08 HI ±0.04	40.03 I ±0.04
	After	40.35 FG ±0.04	40.21 GH ±0.04	40.27 FG ±0.04	42.73 A ±0.04	42.62 A ±0.04	42.12 B ±0.04
38	Before	40.35 FG ±0.04	40.21 GH ±0.04	40.27 FG ±0.04	40.41 F ±0.04	40.071 HI ±0.04	40.03 HI ±0.04
	After	40.35 FG ±0.04	40.21 GH ±0.04	40.27 FG ±0.04	41.51 E ±0.04	41.43 E ±0.04	41.32 E ±0.04

Means with the same letter within row or column are not significantly different.

Table 9. Effect of diazepam and/or heat stress on the respiration rate (pres./min.) (Mean ±S.E.) of broiler chicks stressed at 36-38 days of age.

Treatment Age (days)	Time of Sampling	Without heat stress			Without heat stress		
		Control	Diazepam 0.5 ppm	Diazepam 1.0 ppm	Control	Diazepam 0.5 ppm	Diazepam 1.0 ppm
36	Before	53.50 D ±1.91	49.50 D ±1.91	49.50 D ±1.91	55.62 D ±1.91	50.00 D ±1.91	48.87 D ±1.91
	After	53.50 D ±1.91	49.50 D ±1.91	49.50 D ±1.91	133.50 A ±1.91	119.62 B ±1.91	115.50 B ±1.91
37	Before	53.50 D ±1.91	49.50 D ±1.91	49.50 D ±1.91	53.37 D ±1.91	52.62 D ±1.91	53.75 D ±1.91
	After	53.50 D ±1.91	49.50 D ±1.91	49.50 D ±1.91	116.75 B ±1.91	90.25 C ±1.91	85.37 C ±1.91
38	Before	53.50 D ±1.91	49.50 D ±1.91	49.50 D ±1.91	54.37 D ±1.91	50.50 D ±1.91	50.75 D ±1.91
	After	53.50 D ±1.91	49.50 D ±1.91	49.50 D ±1.91	113.87 B ±1.91	90.10 C ±1.91	88.37 C ±1.91

Means with the same letter within row or column are not significantly differ-

REFERENCES

1. Ali U.M., A.F. Abdel-Hamied and K.Y. El-Nagmy. 1998. Efficiency of some tranquilizers or growth promoters in reducing the adverse effects of heat exposure on chicks during sommer monthes. 7th Conf. A. dev, Res., Fac. Agric., Ain Shams Univ. Cairo, December 15-17 Annals Agric. Sci., Sp. Issue, 725-738.

2. Bottje, W.G. and P.C. Harrison. 1986. Mean Celiac blood flow (MBF) and cardiovascular respinse to X-adrenergic blockafe or elevated Co2 (%Co2 during acute hrat exposure. Poul,Sci, 63 (Supple.1): 68-69 (Abst.).

3. Brown, R.H. 1986. Heat wave reduces broiler, turkey populations in southeast. Feed stuffs, 58 (34):10.

4. Demaziere, J., J.M., Saissy, M., Vitris, M. Seck, M. Nadiaye, M. Gaye, and L. Marcoux. 1992. Effect of diazypam on mortality in acute chlorquine poisoning. Nutrition Abstracts and Reviews. Series B, 062-00431;7A Poul Abstracts, 018-00233.

5. Denbow, D.M, J.A. Cherry, P.B Siegel and H.P. Van Kery. 1981 Eating drinking and temperature response of chicks to brain catecholamine injections. Physiology Behavior, 24:265-269.

6. Denbow. D.M, 1989 Perpheral and central control of feed intake. Poul Sci, 68-938-947. El-Halawani, M.E. W.H. Burke; P.T. Dennison and J.L. silsby. 1982 neuropharmacological aspects of neural regulation of avian endocrinology function. texas tech press. Texas tech press, Texas, PP. 33-40.

7. El-Wardany, H.M. Hussein and E.F. Abdel-Hamied. 1999. Some p[hysiological and nutritional respinses of broiler chicks to an anxiolytic agent admensration during summer month J.Agric. Sci. Mansoura. Univ, 24 (5):2126-2139.

8. Feldman R.S. and Quenzer. 1984. Fundamentals of neurosychopharmacology. Published by Sinauer Associates, Inc., Massachsetts. pp268-285.

9. Gisolfi C.V. R.D. Matthes, K.C. Kregel and R. Oppliger. 1991. Splaichnic sympatheyic nerv activity and cirulating caticholamines in the hyperthermic rate. J. Appl. Physiol, 70:1821-1826.

10. James, W. and M.D Long. 1987. The essential guide to prescription drugs. Perennal Library. Harper and Row, puplisher, New York. p.p 301-305.

11. Mckee, J.S.P.C. Harrison and G.L. Rishowski. 1997. Effects of supplemental ascirbic acid on the energy conversion of broiler chicks during heat stress and feed withdrawal. Poul. Sci, 76:1278-1286.

12. Morley, J.E. T.J. Bartness, B.A. Gosnell and A.S. Levine. 1985. Peptidergic regulation of feeding International Review of Neuroendocrinology, 27:207-218.

13. Sabry, M. 1998. Effect of some neuropharmacological agents on performance of broiler chicks. Thesis, Ph.d, Fac agric., Al-Azhar Unive.

14. SAS. 1994. SAS user's Guide: Statistics. SAS Int., Inc., cary Nc.

15. Singh, H.S and S.C. Sud. 1993. Effect of diazepam and chlorpromazine on the growth and carcass quality of broiler. Indian J. Poul Sci., 28(3):217-221.

16. Sturkie, P.D. W.K. Druffe and M. Sheahan. 1958. Effects of reserpine on the fowl. Amer. J. Physiol., 194-184-18.

17. Yahava, S. and S. Hurwitz. 1996. Induction of thermotolerance in male broiler chickens by temperature conditioning at an early age. Poul. Sci., 75:402-406.

دور الديازيبام على إنتاجية كتاكيت أنتاج اللحم تحت ظروف التربية العادية أو الاجهاد الحراري

شكري محمد الطنطاوي[1] – فادية محمود نصير[2] – مختار عبد الفتاح قيقة[1]
أحمد عباس حسين طلبة[2]

١ *كلية الزراعة – جامعة القاهرة – مصر*
٢ *معهد بحوث الانتاج الحيواني – مركز البحوث الزراعية – وزارة الزراعة – الدقي – القاهرة.*

أجريت هذه الدراسة فى محطة بحوث القناطر الخيرية التابعة لمعهد بحوث الانتاج الحيواني – مركز البحوث الزراعية – وزارة الزراعة. بغرض دراسة تأثير مادة الديازيبام Diazepam (أحد العقاقير المهدئة) على بعض الصفات الانتاجية والفسيولوجية لكتاكيت اللحم أثناء التربية العادية وكذلك أثناء الاجهاد الحراري ٣٨ درجة مئوية. وقد تم إستخدام ٣٠٠ كتكوت أربورإيكرز (هجين تجاري لانتاج اللحم) تم توزيعها عشوائياً إلى ثلاثة مجموعات متساوية كل منها ١٠٠ كتكوت وتم تربيتها تحت ظروف متماثلة مع إضافة مادة الديازيبام بمستويات صفر و٠,٥ و١ جزء في المليون. وعند عمر ٣٦ يوماً تم تقسيم كل معاملة إلى مجموعتين متساويتين كل منها ٥٠ كتكوتاً الأولى تم تربيتها تربية عادية (٢٢ درجة مئوية) بدون تعرض حراري حتى نهاية التجربة والثانية تم تعريضها للإجهاد الحراري (٣٨ درجة مئوية) لمدة ٤ ساعات لمدة ٣ أيام بدأ من عمر ٣٦ حتى ٣٨ يوماً.

ودلت النتائج على أن هناك زيادة معنوية بإضافة الديازيبام بمستوياه على معدل الزيادة في وزن الجسم وتحسن الكفاءة التحويلية مع زيادة البروتين الكلي في بلازما الدم وذلك بدون أو مع الإجهاد الحراري. وبصفة عامة تحسن مستوى هرمون تراي ايودوثيرونين Tri-iodothyronine (T3) تحت ظروف الإجهاد الحراري. أدت إضافة مادة الديازيبام إلى إنخفاض معنوي في كل من مستوى هرمون الادرينالين في بلازما الدم ومعدل النفوق مع أو بدون التعرض للاجهاد الجراري، بينما لم يتأثر معنوياً كل من معدل التنفس ودرجة حرارة الجسم تحت التربية العادية أو التعرض الحراري وهرمون تراي ايودوثيرونين Tri-iodothyronine (T3) مع الظروف العادية.

التعرض للاجهاد الحراري أدى إلى إنخفاض معنوي في كل من الوزن المكتسب وكل من مستوى هرموني T3 والبروتين الكلي في بلازما الدم. بينما أدى إلى أرتفاع معنوي في كل من معدل النفوق ومستوى هرمون الادرينالين ومعدل التنفس ودرجة حرارة الجسم.

وأظهرت النتائج أنه يجب لإضافة الديازيبام بمستوياته على معدل الزيادة في وزن الجسم ومعدل التحويل الغذائي ومعدل النفوق ومستوى كل من هرمون الأدرينالين وهرمون (T3) وبروتينات الدم مع أوبدون الإجهاد الحراري. ولذلك ينصح بإستخدام مادة الديازيبام المهدئة بمعدل ١ جزء في المليون، في علائق كتاكيت اللحم في الأجواء الحارة وشبه الحارة.