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Effect of Adding Different Levels from Melatonin in Some Characteristics Semen of Broiler Breeder Male Ross308

ABSTRACT

The aim of the present study was to evaluate the effect of adding different levels of melatonin in some of semen Characteristics and antioxidant status in male broiler breeder Ross308, from16/11/2017 to 30/1/2018.Atotal of 25 bird of Ross 308 broiler breeder males ,30 weeks' old were used in this study. The birds were randomly distributed into five group with five replicates each. Each treatment group constituted of 5 birds (1bird each replicate). the broiler breeder males administrated orally with capsules contain melatonin. Treatment groups were as following: **T1**: Birds fed the basal diet without any addition (control),**T2**: Birds fed diet supplemented with 15mg/kg of diet,**T3:** Birds fed diet supplemented with 30 mg/kg of diet,**T4:** Birds fed diet supplemented with 40 mg/kg of diet and **T5:** Birds fed diet supplemented with 60 mg/kg of diet. The result of the study revealed a significant decrease in the ejaculated volume, sperm's mass and individual motility and sperm concentration, With a significant increase in dead and abnormal sperm ratio. However, administration with melatonin at (60) mg/kg diet resulted in significant increase ($p<0.05$) in glucose and total protein concentration of seminal plasma. Also adding melatonin with (15) mg/kg diet had significant improved in the antioxidant status.

INTRODUCTION

Low-Fertility is a serious problem that facing farm breeders in general and poultry breeders in particular, about 30% of these problems are associated with low male fertility (Barkhordari *et al*, 2013). Which is result from problems in sperm synthesis, a decrease in the sperm quality production or a nutritional deficiency in the bird's diet as a deficiency of vitamins, especially vitamin E (Barreto *et al*., 1997). Several studies have confirmed the important role of antioxidants in protecting sperm from injury caused by oxidative stress, the imbalance between active oxygen species and free radicals and natural antioxidants in the sperm has a negative impact on sperm fertility rate(Lundsberg *et el*,2014). Rooster's semen had a low levels of antioxidants compared to other birds and mammalian within high percentage of polyunsaturated fatty acids (PUFA) in the sperm membrane witch make it an easy target to oxidants. Melatonin is a potent antioxidant that exists in most organisms and contribute in many sperm functions such as increased sperm motility, maturation and adaptability (Medrano *et al*., 2017). Many studies have shown that melatonin is significantly better than the classic antioxidants in resisting free-radical–based molecular destruction. In these in vivo studies, melatonin was more effective than vitamin E and C(Ahmed *et al*., 2011; Montilla *et al*.,2001). Melatonin is synthesized and secreted from the pineal gland as well as many other organs such as kidneys and

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retinal in response to darkness, hence the name hormone of darkness (Jahanban-Esfahlan *et al*,2018). Melatonin plays a series of biological functions such as regulation of circadian cycles, signaling for seasonal reproduction, antioxidant, and immunomodulation (Reiter *et al*., 2016). As well as anti-inflammatory, anti-cancer and circadian rhythm also its effects to organization endocrine rhythm (Lacoste *et al*, 2015). Peschke *et al*., (2006) noticed that melatonin plays an active role in increasing the immune system's capacity. Rocha *et al*, (2015) had shown that melatonin plays an important role to regulating blood sugar level and its metabolism. In addition, Melatonin protect the testicular function and the sperm from the harmful effects that occur in the body (Chabra *et al*., 2014**).** The study aimed to:

Determination the effect of adding different levels of melatonin in some of semen characteristics and antioxidant status in male broiler breeder Ross308.

MATERIALS AND METHODS

Birds and diet

Twenty-five broiler breeder males, thirty weeks of old individually caged. Fed with broiler breeder diets containing (2700) kcal/kg and (11.50 %) crude protein. This birds exposed to 16 L : 8 D. They were randomly divided to five group each one included 5 replicate (one per each), the males administrated orally with capsules contain melatonin as the following: (supplemented with 15,30,45,60 melatonin mg/kg diet for 2^{nd}, 3^{rd}, 4^{th} and 5^{th} treatment respectively). While the first group consider as control. After a 2-week adaptation period to the basal diet and training to abdominal massage for semen collection (Burrows and Quinn, 1937).

Semen Processing and Evaluation

The birds were subjected to experimental treatments and seminal characteristics were determined weekly for 4 and 8 weeks. Ejaculates obtained from the birds individually in each replicate evaluated. Seminal volume was measured in graded collecting tubes. Sperm's mass and individual motility was assessed by using an Olympus compound light microscope (Shinjuku, Tokyo) by method of (parker *et al* ,1942) , Sperm live/dead ratio and abnormality were evaluated, using a portion of ejaculate stained with warmed eosin-nigrosin solution. The stained diluted seminal smear was prepared, and at less 250 spermatozoa in each slide were evaluated and unstained spermatozoa were considered as live (Lack and Stewart,1978). By the method of Allen and Champion (1955) sperms concentration were estimated.

Seminal plasma Processing and Evaluation

After 4 and 8 weeks on treatment, semen was collection as pooled sample with three times for all replicates. And put in cold centrifuge 5000 r/m (30 mints) to obtaining the seminal plasma which used to determined glucose, total protein concentration this estimated by using kit (Bio- Labo French company). Glutathione (GSH) was measuring by method of (Al- Zamely *et al*,2001), malondialdehyde (MDA) was estimated as method of (Guidet and Shah,1989).

Statistical analysis.

The data obtained were subjected to analysis of variance (ANOVA) at $P \leq 0.05$. Significant means were separated using (Duncan multiple range test,1955) using SAS (2012) software package. vectorial design According to the following mathematical model:

$Yijk= \mu + Ti + Sj + TSij + eijk$

where Yijk is the individual observation, μ is the overall mean,Ti is the treatment effects (i=1, 2…, 5), Sj is the period effects (j=1,2),TSij Interaction effect between treatment and period, and eijk is the error term.

RESULTS AND DISCUSSION

Results

The results in table (1) and (2) showed a significantly decrease in ejaculate volume for the groups that treated with melatonin (T2,T3 and T5) , a significant increase of dead and abnormal sperm ratio compared with control, while adding melatonin at 45 mg/kg(T4) diet for four weeks has resulted in a significant decrease in the dead and abnormal sperm ratio, compared to all other study treatments,. Also showed lower percentages of mass and individual progressive motility, the impact of the Treatment duration in the semen Characteristics find a significant decrease in the second period compared to the first period. It is noted from the same table that there is no significant differences between melatonin addition treatments T2,T3 and T4 compared to the control treatment. While T5 significantly reduce sperm concentration compared with melatonin treatment and control.

The results in the table (3) showed that T5 result in a significant increase in glucose concentration compared to T1 and other treatment. The effect of period showed a significant decrease in glucose concentration in the first period compared with the second. The addition of melatonin at the concentration of (60) mg/kg feed led to a significant increase in the concentration of total protein compared to control. second treatment records the lowest values compared to the third, fourth and fifth treatments. As showed in the same table MDA level were significantly higher in the fifth group compared to control group, on the other hand, GSH level were significantly increase in the second group compared to melatonin treatments and control.

Discussion

Semen characteristics

Ejaculated volume was significantly decrease during melatonin administration especially in the second period of the study compared to the first. That's due to the negative impact of melatonin on testosterone secretion from leydig cell in the testes .Taha,(2008) noticed a positive correlation between ejaculated volume and testosterone levels in male broiler breeders. McGuire *et al*, (2011) observed that melatonin enters into the gene expression of GnIH in male gonadal, as well as observed in *a in Vetro* studied that both of Melatonin and GnIH are significantly decrease the secretion of testosterone from the quail testes. the effect of testosterone reduction may extend in its negative effect on sperm motility and viability ,since the decrease of this hormone may give signals to the male reproductive system to stop or reduce its activity, and led to increase in dead/abnormal sperm ratio. Al-Darraji (1998) observed a highly negative correlation between dead and abnormal sperm and it mass and individual motility. Ortiz *et al*., (2011) showed that adding melatonin with high concentration led to significant increase in dead and abnormal sperm ratio because of loses the flexibility and liquidity necessary for the movement. It may be due to reduce in sperm concentration as the mass and individual movement of the sperm increases with concentration (Taha, 2008).

Characteristics of seminal plasma

The reduction of glucose concentration in the seminal plasma when treated with melatonin may be due to the fact that glucose is the primary source of energy production in sperm birds, meaning that increased concentration and vitality of the sperm is matched by a decrease in the concentration of plasma glucose (Taha, 2008). When increase in total protein concentration may be attributed to the high percentage of dead and abnormal sperm table(1). The level of MDA and GSH is one of the most important indicator for the antioxidant status. Increasing in the MDA level reflects the amount of

oxidative damage suffered by sperm, which is characterized by its high content of long-chain unsaturated fatty acids (Surai *et al*, 1998).

Table (1) Effect of melatonin in some of semen characteristics in broiler breeder males Ross308 during different periods.

Ejaculate volume (ml)			
Treatments	**First period**	**Second period**	**Ejaculate volume(ml)**
T1	0.35 ± 0.04 a	0.31 ± 0.02 a	0.33 ±0.02 A
T2	0.33 ± 0.01 a	0.27 ± 0.02 a b	0.30 ± 0.01 A B
T3	0.33 ± 0.02 a	0.22 ± 0.02 b c	0.28 ± 0.02 B C
T4	0.31 ± 0.02 a	0.18 ± 0.02 c d	0.25 ± 0.02 C
T5	0.22 ± 0.02 b c	0.12 ± 0.01 d	0.16 ± 0.02 D
Effect of period	0.32 ± 0.01 A	0.22 ± 0.01 B	
Mass motility %			
Treatments	**First period**	**Second period**	**Mass motility %**
T1	85.10 ± 0.94 c	86.76 ± 2.31 b c	85.93 ± 1.20 A B
T2	87. 68 ± 0.95 b c	88.04 ± 0.65 a b c	87.86 ± 0.54 A
T3	90.32 ± 1.12 a b	79.46 ± 1.23 d	84.98 ± 1.97 A B
T4	91.98 ± 1.13 a	68.40 ± 1.41 e	80.19 ± 4.02 C
T5	79.18 ± 1.36 d	59.62 ± 1.53 f	69.40 ± 3.40 D
Effect of period	86.58 ± 1.02 A	76.45 ± 2.31 B	
Individual motility %			
Treatments	**First period**	**Second period**	**Individual motility %**
T1	83.30 ± 1.49 c d	84.32 ± 1.86 b c d	83.81 ± 1.14 A
T2	88.12 ± 0.84 a b	80.65 ± 1.44 e d	84.34 ± 1.48 A
T3	87.26 ± 1.07 a b c	73.63 ± 1.23 f	80.56 ± 2.36 B
T4	89.30 ± 0.68 a	66.74 ± 1. 63 g	78.02 ± 3.85 B
T5	78.92 ± 1.39 e	53.42 ± 2 h	66.17 ± 4.44 C
Effect of period	85.38 ±0.90 A	71.78 ± 2.33 B	

T1:control treatment .**T2:** supplemented with melatonin 15 mg/kg diet.**T3:** supplemented with melatonin 30 mg/kg diet .**T4:** supplemented with melatonin 45mg/kg diet.**T5:** supplemented with melatonin 60mg/kg diet.

Table (2) Effect of melatonin in some of semen characteristics in broiler breeder males Ross308 during different periods.

Dead sperm %			
Treatments	**First period**	**Second period**	**Dead sperm %**
T1	13.72± 1.50 e f	12.68 ± 0.84 f g	13.20 ± 1.40 C
T2	8.88 ± 1.86 g h	17.24 ±1.62 e d	13.06 ± 1.63 C
T3	10.76 ± 1.08 f g h	24.14 ± 1.23 c	17.45 ± 2.36 B
T4	7.72 ± 0.68 h	30.28 ± 1.62 b	19 ± 3.85 B
T5	20.08 ± 1.39 c d	45.58 ± 2 a	32.83 ± 4.40 A
Effect of period	12.23 ± 1.01 B	25.98 ± 2.44 A	
Abnormal sperm %			
Treatments	**First period**	**Second period**	**Abnormal sperm %**
T1	15.52 ± 1.50 f	11.12 ± 1.86 f	15 ± 1.14 D
T2	14.48 ± 0.84 e f	18.38 ± 1.44 e d	14.75 ± 1.14 D
T3	13.46 ± 1.08 f	25.40 ± 1.36 c	19.43 ± 2.14 C
T4	12.22 ± 0.68 f	33.96 ± 1.63 b	23.09 ± 3.71 B
T5	22.38 ± 1.39 c d	47.00 ± 2 a	35.13 ± 4.40 A
Effect of period	28.02 ± 0.94 A	14.94 ± 2.53 B	
Sperm concentration (10^6/ml)			
Treatments	**First period**	**Second period**	**Sperm concentration(10^6/ml)**
T1	4.05 ± 0.15 a b	3.98 ± 0.22 a b	4.01 ± 0.12 A
T2	3.58 ± 0.25 b c	3.32 ±0.12 c	3.75 ± 0.15 A
T3	4.05 ± 0.19 a b	2.60 ± 0.06 d	3.32 ± 0.26 B
T4	4.18 ± 0.07 a	1.97 ± 0.11 e	2.77 ± 0.29 C
T5	3.13 ± 0.32 c	1.48 ±0.06 e	2.31 ± 0.31 D
Effect of period	3.80 ±0.11 A	2.67 ± 0.19 B	

T1:control treatment .**T2:** supplemented with melatonin 15 mg/kg diet.**T3:** supplemented with melatonin 30 mg/kg diet .**T4:** supplemented with melatonin 45mg/kg diet.**T5:** supplemented with melatonin 60mg/kg diet.

Table (3) Effect of melatonin in the concentration of glucose, total protein, GSH and MDA levels in the seminal plasma of the broiler breeder males Ross308 during different periods.

Glucose (mg/dl)			
Treatments	**First period**	**Second period**	**Glucose concentration (mg/dl)**
T1	15.90 ±0.73 d e	16.90 ±0.73 c d	16.40 ± 0.51 B
T2	13.70 ± 0.25 e f	12.93 ± 1.01 f	13.31 ± 0.49 D
T3	13.66 ± 0.58 e f	15.43 ± 0.40 d e f	14.44 ± 0.50 C D
T4	13.76 ± 1.04 e f	18.50 ± 0.50 b c	16.13 ± 1.17 B C
T5	19.50 ±1.45 b	25.03 ± 0.87 a	22.26 ± 1.45 A
Effect of period	15.30 ± 0.69 B	17.76 ± 1.12 A	
Total protein (gmL/100ml)			
Treatments	**First period**	**Second period**	**Total protein (gmL/100ml)**
T1	1.36 ± 0.02 e f	1.38 ± 0.02 e f	1.37 ±0.01 C
T2	1.32 ± 0.04 e f	1.12 ± 0.03 f	1.22 ± 0.05 C
T3	1.34 ± 0.17 e f	1.52 ± 0.02 e d	1.43 ± 0.08 C
T4	1.84 ± 0.06 d	2.28 ± 0.03 c	2.06 ± 0.10 B
T5	2.62 ± 0.29 b	3.57± 0.05 a	3.10 ± 0.25 A
Effect of period	1.69 ±0.14 B	1.97 ± 0.23 A	
glutathione(mm/L)			
Treatments	**first period**	**second period**	**Glutathione(mm/L)**
T1	1.17 ± 0.03 c	1.13 ± 0.02 b	1.24 ± 0.03 B
T2	1.32 ± 0.05 b	1.58 ± 0.04 a	1.45 ± 0.06 A
T3	1.15 ± 0.01 c	1.38 ± 0.01 b	1.27 ± 0.05 B
T4	1.07 ± 0.02 c	0.83 ± 0.04 d	0.95 ± 0.05 C
T5	0.09 ± 0.05 d	0.62 ± 0.03 e	0.77 ± 0.07 D
Effect of period	4.50 ± 0.08 A	4.45 ± 0.21 A	
Malondialdehyde (mm/ml)			
Treatments	**First period**	**Second period**	**Malondialdehyde(mm/ml)**
T1	4.76 ± 0.23 c d	4.28 ±0.41 d c	4.52 ± 0.23 B
T2	4.35 ± 0.08 c d	3.38 ± 0.23 e	3.87 ± 0.24 C
T3	4.11 ± 0.06 d	4.04 ± 0.05 d	4.07 ± 0.04 C
T4	4.43 ± 0.08 d e	5.06 ± 0.08 a b	4.75 ± 0.15 A B
T5	4.84 ± 0.05 b c	5.47 ± 0.28 a	5.15 ± 0.18 A
Effect of period	4.50 ± 0.08 A	4.45 ± 0.21 A	

T1:control treatment .**T2:** supplemented with melatonin 15 mg/kg diet.**T3:** supplemented with melatonin 30 mg/kg diet .**T4:** supplemented with melatonin 45mg/kg diet.**T5:** supplemented with melatonin 60mg/kg diet.

REFERENCES

Ahmed, H. H.; Essawy, G. S.; Salem, H. A. and Abd el-daim, M. A. (2011). Effect of Melatonin on some hematological parameters and immune status of broiler chicks. Journal of Agricultural Science, 3(2): 243

Al-Daraji, H. J. (1998). The effect of adding ascorbic acid to the bush in the physiological and productive characteristics of the flocks of the mother of the meat breeder Vabro during the summer months (PhD thesis). The College of Agriculture, University of Baghdad**.**

Allen, C. J.; and Champion, L. R. (1955). Competitive fertilization in the fowl. Poultry Science, 34(6), 1332-1342.

Al-Zamely, O. Y.; Al-Nimer, M. S. and Al-Muslih, R. K. (2001). Detection the level of peroxynitrite and related antioxidant status in the serum of patients with acute myocardial infraction. Nation. J. Chem, 4: 625-637.

Barkhordari, A.; Hekmatimoghaddam, S.; Jebali, A.; Khalili, M. A.; Talebi, A. and Noorani, M. (2013). Effect of zinc oxide nanoparticles on viability of human spermatozoa. Iranian journal of reproductive medicine, 11(9): 767.

Barreto, S. L. T.; Hossain, S. M. and Mourao, G. B. (1997). Effect of dietary vitamin E on productive and reproductive performance of broiler breeders. Arquivo Brasileiro de Medicina Veterinaria e Zootecnia, 49(4): 453-463.

Boone, M. A. (1968). Family differences in semen quality in one strain of White Plymouth Rocks. Poultry science, 47(4):1049-1051.

Burrows, W. H. and Quinn, J. P. (1937). The collection of spermatozoa from the domestic fowl and turkey. Poultry Science, 16(1): 19-24.

Chabra, A.; Shokrzadeh, M.; Naghshvar, F.; Salehi, F. and Ahmadi, A. (2014). Melatonin ameliorates oxidative stress and reproductive toxicity induced by cyclophosphamide in male mice. Human & experimental toxicology, 33(2): 185-195.

Duncan,B.D.(1955). Multiple range an multiple F-test biometrics.

Gabriel, I. (1957). A complete one-man technique for the collection of cock semen and the insemination of caged hens. Poultry Science, 36(5): 1035-1038.

Guidet, B. R. and Shah, S. V. (1989). In vivo generation of hydrogen peroxide by rat kidney cortex and glomeruli. American Journal of Physiology-Renal Physiology, 256(1): F158-F164.

Jahanban-Esfahlan, R.; Mehrzadi, S.; Reiter, R. J.; Seidi, K.. Majidinia, M.; Baghi, H. B. and Sadeghpour, A. (2018). Melatonin in regulation of inflammatory pathways in rheumatoid arthritis and osteoarthritis: involvement of circadian clock genes. British journal of pharmacology, 175(16): 3230-3238

Lacoste, B.; Angeloni, D.; Dominguez-Lopez, S.; Calderoni, S.; Mauro, A.; Fraschini, F. and Gobbi, G. (2015). Anatomical and cellular localization of melatonin MT 1 and MT 2 receptors in the adult rat brain. Journal of pineal research, 58(4): 397-417.

Lake, P. E. and Stewart, J. M. (1978). Artificial insemination in poultry. Her Majesty's Stationery Office.

Lundsberg, L. S.; Pal, L.; Gariepy, A. M.. Xu, X.; Chu, M. C. and Illuzzi, J. L. (2014). Knowledge, attitudes, and practices regarding conception and fertility: a population-based survey among reproductive-age United States women. Fertility and sterility, 101(3): 767-774

McGuire, N. L.; Kangas, K. and Bentley, G. E. (2011). Effects of melatonin on peripheral reproductive function: regulation of testicular GnIH and testosterone. Endocrinology, 152(9): 3461-3470.

Medrano, A.; Contreras, C. F. B.; Herrera, F. M. and Alcantar-Rodriguez, A. M. (2017). Melatonin as an antioxidant preserving sperm from domestic animals. Asian Pacific Journal of Reproduction, 6(6): 241.

Montilla, P.; Cruz, A.; Padillo, F. J.; Tunez, I.; Gascon, F.; Munoz, M. C. and Pera, C. (2001). Melatonin versus vitamin E as protective treatment against oxidative stress after extra-hepatic bile duct ligation in rats. Journal of pineal research, 31(2): 138-144.

Ortiz, A.. Espino, J.; Bejarano, I.; Lozano, G. M.; Monllor, F.; García, J. F. and Rodríguez, A. B. (2011). High endogenous melatonin concentrations enhance sperm quality and short-term in vitro exposure to melatonin improves aspects of sperm motility. Journal of pineal research, 50(2): 132-139.

Parker, J. E.; McKenzie, F. F.and Kempster, H. L. (1942). Fertility in the male domestic fowl.

Peschke, E.; Frese, T.; Chankiewitz, E.; Peschke, D.; Preiss, U.; Schneyer, U. and Mühlbauer, E. (2006). Diabetic Goto Kakizaki rats as well as type 2 diabetic patients show a decreased diurnal serum melatonin level and an increased pancreatic melatonin-receptor status. Journal of pineal research, 40(2): 135-143.

Reiter, R. J.; Mayo, J. C.; Tan, D. X.; Sainz, R. M.; Alatorre-Jimenez, M. and Qin, L. (2016). Melatonin as an antioxidant: under promises but over delivers. Journal of pineal research, 61(3): 253-278

Rocha, C. S.; Rato, L.; Martins, A. D.; Alves, M. G. and Oliveira, P. F. (2015). Melatonin and male reproductive health: relevance of darkness and antioxidant properties. Current molecular medicine, 15(4): 299-311.

SAS Veraion , Statistical Analysis System (2012). SAS Institute Inc., Cary , NC.27512-8000, USA.

Scanes, C. G. (Ed.). (2014). Sturkie's avian physiology. Elsevier.

Surai, P. F.; Blesbois, E.; Grasseau, I.; Chalah, T.; Brillard, J. P.; Wishart, G. J. and Sparks, N. H. C. (1998). Fatty acid composition, glutathione peroxidase and superoxide dismutase activity and total antioxidant activity of avian semen. Comparative Biochemistry and Physiology Part B: Biochemistry and Molecular Biology, 120(3): 527-533.

Taha, A. T. (2008). Effect of vitamin A and C and the seeds of the ring in reducing the effect of oxidative stress in the physiological and reproductive performance of the parents of the meat broiler. Faculty of Agriculture and Forestry, University of Mosul.

Ubuka, T.; Bentley, G. E.; Ukena, K.; Wingfield, J. C. and Tsutsui, K. (2005). Melatonin induces the expression of gonadotropin-inhibitory hormone in the avian brain. Proceedings of the National Academy of Sciences, 102(8): 3052-3057.

تأثير أضافة مستويات مختلفة من الميلاتونين في بعض صفات السائل المنوي لديكة أمهات فروج اللحم Ross 308

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المستخلص

أجريت هذه الدراسة في احدى قاعات الطيور الداجنة التابعة لقسم الإنتاج الحيواني في كلية الزراعة جامعة تكريت للمدة من16/11/2017 لغاية 30/1/2018 . هدفت التجربة الى دراسة تأثير اضافة الميلاتونين بتراكيز مختلفة ومدد زمنية مختلفة في بعض صفات السائل المنوي والبلازما المنوية لديكة امهات فروج اللحم. أستخدم في هذه الدراسة (25) ديك من أباء فروج اللحم نوع روز Ross308 وبعمر 30 أسبوع. تم توزيع الديكة بصورة عشوائية الى خمس معاملات بواقع (خمسة ديكة/معاملة) وبخمسة مكررات (1ديك/مكرر) وفقا لما يأتي: معاملة السيطرة تناولت عليقة قياسية بدون أي اضافة اما المعاملات الثانية والثالثة والرابعة والخامسة فقد جرعت بالميلاتونين بتركيز 15 و 30 و45 و60 ملغم /كغم علف على التوالي . ادت اضافة الميلاتونين بالتراكيز المرتفعة (60،45،30) ملغم/كغم علف الى انخفاض معنوي في حجم القذفة خلال مدتي الدراسة والمدة الكلية رافقه انخفاض معنوي في معدلات الحركة الجماعية والفردية للنطف وتركيز النطف مع وجود ارتفاع معنوي في نسبة النطف الميتة و المشوهة .وفيما يخص صفات البلازما المنوية فقد ادت اضافة الميلاتونين الى ارتفاع معنوي في تركيز الكلوكوز والبروتين الكلي لصالح المعاملة الخامسة في حين سجلت معاملات الإضافة الاخرى انخفاضا مقارنة بمعاملة السيطرة ،وفيما يخص تركيز GSH سجلت المعاملة الثانية تفوقا معنويا في مستوى GSH قابله انخفاض معنوي في مستوى MDA .

الكلمات المفتاحية: الميلاتونين، السائل المنوي، ديكة، فروج اللحم، Ross 308