Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 4, 2021, Pages. 3060 – 3068
Received 05 March 2021; Accepted 01 April 2021.

Physiological Study to Broiler Bird Infected with Coccidian Parasite

Dr. Zainab Abed Muhsin AL-Haboobi

Ph.D. Biology Assist .prof. ,AL-FuratAL-Awsat Technical University/ Karbala Technical Institute .E-mail .drzainababed2017@gmail.com

Abstract

Infection with Eimeria parasites is known as coccidiosisit can affect all mammals and some types of Birds, some fish, some reptiles, and some amphibians. the infection millions of intestinal cells may become infected when the parasites exit in large numbers for the intestinal cavity to infect other tissues. The result is diarrhea of different types and including bloody and watery diarrhea. The results of study showed that there are significant differences in the correlation between the increase in the ratio of the blood Fertin protein with the growth hormone, on the contrary, a decrease level of the thyroxin (T3) and (T4) and research appeares relationship between the low level of the hormone ,the increase in the growth hormone(GH) and thyroid stemulationhormon (TSH)**.** Coccidiosis affects not effected to the health of the bird but does not affect the level of growth hormones is not related to hormonal deficiency but lack of absorption of nutrients from the intestine for the damage caused by the parasite in the lining of the intestine and the villi and thus the growth of the bird.

Keywords: broiler bird infected, coccidian parasite.

Introduction

There are different types of coccidiosis. They live and reproduce inside an animal cell that infects parasites of the intestinal tract according to the site . This disease can cause fever and diarrhea and some signs of lethargy, sudden loss of consciousness from the impact of injury on the host, and there are also changes in behavior and weak immunity that lead to death. There is a clear form of it With the continuation of the infection, so this can cause dehydration of the host and can lead to death. **(1,2)** .Coccidiosis is diagnosed by finding egg sacs in the fecal sample, as they are distinguished in a circular or oval shape with different sizes depending on the variety. as they represent a type of sporadic single-celled parasite it apical microscopic type.In

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 4, 2021, Pages. 3060 – 3068
Received 05 March 2021; Accepted 01 April 2021.

this research, the physiology of some hormones and some proteins that affect the growth of birds was studied by taking blood samples from birds infected with coccidiosis after confirming the infection by doing a laboratory examination of stool samples and diagnosing coccidia eggs, then blood was drawn from the infected samples and separating the serum to make laboratory tests for thyroid gland functions By analyzing thyroxin T3,T4 hormone and thyroxin-stimulating hormone (TSH) .study growth hormone and ferritin protein level are important to of birds infection with coccidiaparasiteson these parameters, which is important to study the role of parasit in body of hosteando see the interaction of the parasite with the host physiology ,ferritin protein imortant to for hemoclopene synthesis and iron binding. Absorbed from the intestine to see the interaction of the parasite with the host, iron is vital for the growth of all living things, from prokaryotes to humans. Iron plays an important role in many cellular processes, such as breathing, photosynthesis, oxygen transport, and DNA synthesis. Iron is necessary but not readily bioavailable in aerobic environments, highly toxic. Therefore, iron is usually bound to proteins and the entire body concentrations and cellular iron must be regulated in all organisms. Iron storage protein is ferritin with many soluble and fluid-oxidizing oxidants and avoids the generation of toxic free radicals derived from Fe2 + through a reaction with the harmful free radicals of most molecules. Tf and Lf maintain the free iron concentration too low to preserve, to see the effect of infantile injury on body development (3). The thyroid gland also plays an important role in the general health of the birds. However, there is still much research trying to study the effect of parasitic infections a on the level of hormones secreted in host body and understand the serious health consequences of untreated thyroid disorders. Diagnosis and treatment is one of the basic steps for managing thyroid problem, and it will help control related symptoms **(4)**. In controlling metabolism (the energy produced and used by the body) and regulating the body's sensitivity to hormones, as the lack of activity causes weight disorder, increased lethargy, disruption in body shape, feathered fluff, and inactivity of birds. It also affected the decline of immunity. It would be exposed to deadly diseases, including viruses such as Newcastle and bird flu (5)

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 4, 2021, Pages. 3060 – 3068
Received 05 March 2021; Accepted 01 April 2021.

Materials and methods

The study was carried out by taking samples of the infected birds a poultry field to raise the broiler chickens at the age of 28 days, which showed symptoms of the disease for 3 days, and after the diagnosis by laboratory analysis, taking samples out by making a wet swab and diagnosing eggs sac to E.tenella و E. necatrix type . then study (Number of eggs raised with feces) (OPG) to examined samples of equal severity of infection ,and Blood samples collected in gel tubes,to separating the serum by centrifuge system, and serum was withdrawn and stored in freezing , tested samplese to growth hormon and Thyroid hormone and feritin protein kites by (ELISA device and the double-protein examination with the semen vids system). The results were entered for statistical analysis compared to a group,In order to determine the significant differences between the control group and the affected group using statistical analysis at the probability level(LSD) $P < 0.05$ (5).

Results and discussion

Intestinal injury events require the adhesion of the pathogen to cause damage cells in the epithelial cells of the intestine, as it occurs by adhesion to a special type of capillaries to make up the bundles that cause the self-assembly of parasitic cells and their merging with the host cells in a distinctive way known as localized adherence and causes effects to substance absorption Diet and inflammation of the intestine.(7)Reduced blood sugar level due to parasitic and bacterial infection, which increases the body's need to metabolize excessive sugar and fat by stimulating thyroid hormones to obtain the energy needed by the body to defend against disease and perpetuate life, and attribute that to the reason for the occurrence of malabsorption of the intestine as a result of diarrhea that leads to a cycle Weak absorption of carbohydrates that are absorbed in the intestine in the form of monosaccharides and then transferred to the bloodstream through capillaries, the portal cycle. The results showed in Table 1 that there are significant differences in the correlation between the increase in the ratio of the blood Fertin protein with the growth hormone, on the contrary, a decrease level of the thyroxin (T3) which converted from the thyronine hormone (T4) and research appeares relationship between the low level of the hormone ,the increase in the growth hormone(GH) and thyroid stemulationhormon (TSH) that needs to increase metabolic processes to produce ,The hormone

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 4, 2021, Pages. 3060 – 3068
Received 05 March 2021; Accepted 01 April 2021.

imbalance of the heat supply it mentioned decrease T3 and T4 hormonse ,and increase TSH help thyroid glanf function , T3 and T4. Changes with an increase in the hormone of nucleus, as well as the body's need to stimulate the pituitary gland, stimulate the thyroid gland to produce the quadruple hormone and then convert to thyroxine to help the living cell to release energy from increasing metabolism to the body's actual and exceptional need when Infection with conditions leading to fever and energy consumption The body is stimulated when a thyroid hormone deficiency is another hormone is a thyroid gland stimulator that is secreted from the pituitary from the same genetic sequence to stimulate the growth hormone and for this was done in the study taking a hormone a Growth to measure the level of knowledge of the impact of the injury parasite on the growth of the body . increase of thyroid hormone deficiency. stimulating hormone, as the growth hormone, the two ferries and the thyroid hormone stimulator are among the main hormones generated by a single genetic chain, as well as everyone is responsible for Physical increase in body cells and growth, and these results are confirmed by what came in the research. Also, we note that coccidiosis affects the health condition of the bird, but does not affect the level of growth hormones and therefore that light weight has no correlation with hormonal deficiency but rather a lack of absorption of nutrients from the mother DONC damage caused by the parasite in the intestine villi lining and thus the growth of the bird (Scanes,2011;**Collin et al. ،2003**;Darras et al ,1993) (8,9,10). The study agerr with Colin et al.,(2005) and Sunawa(2009) the fatty tissue in chicken is affected by the level of thyroid hormones and growth hormone thyroid hormones, especially T3 ,The amount of fatty tissue in chickens is linked to the state of the thyroid gland with the increase in the fatty tissue in thyroid chicken treated with methimazole and low fat glucagon liver to introduce sugar from the fatty tissue, Some studies supporting the results of the research also showed a marked decrease in the blood proteins of people who suffer from diarrhea cases by microorganisms (bacteria and parasites) and this necessitates the body's need to increase the growth hormone to compensate for the deficiency that is taking place and this reduces the absorption of amino acids needed to build proteins, which leads to a decrease Although proteins have a role in determining the osmotic stress of plasma, an imbalance in metabolism reduces total blood proteins, The process of absorption of amino acids is carried out in an efficient way in the intestine with the presence of sodium and then goes to the portal cycle to the liver Since there is a disturbance in the body fluids and its decrease

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 4, 2021, Pages. 3060 – 3068
Received 05 March 2021; Accepted 01 April 2021.

as a result of diarrhea, the sodium component decreases and then leads to a decrease in the total blood protein proteins .(11,12,13) . And the resalte notagerr with Wilson *et al*. (1986) they report that was Insulin can affect fat metabolism but the physiological importance of these effects Uncertain. The synthesis of fatty acids occurs mostly in poultry liver and under Control of metabolic hormones, and this was reported by They mentioned that the increase in fat formation in the laboratory in the presence of insulin also stimulates with T3; insulin also stimulates free fatty acids. Also, Black (1988) also confirmed the lack of liver production of proteins and the lack of pure protein also the results in the table appear, as the table showed There are significant differences in the elevation of the level of the hormone with the increase of the feriten protein as well between the table. There is a correlation with the ratio of ferritin with the increase in stimulation of the thyroid hormone stimulator . as well as are responsible for increasing the physical relationship between the body and growth, T3 reduces the expression of genes related to obesity, including brain-derived In the neurotrophic factor (BDNF), the leptin receptor (LEPR), pro-opiomelanocortin (POMC),Thyrotropin-releasing hormone on body growth hypothalamus neurons while traumatic infection (TRH) and AGRP in chickens (14,15,16). Growth is controlled tightly in the body to ensure optimal growth. that the examen weight/volume managers will be important largely chosen in birds due to the flying energy requirements. HGH specifically works on the growth of immune tissues in birds. There is special roles of T cells and B cells during growth in the thymus gland and follicles respectively, Fabricius. In small chicken, it is partially reduced(17).The study appeared normal growth rate critical concentrations Thyroid hormones and growth in poultry,on dwarf chicks to restore normal blood circulation concentrations T3 produces some increase in the rate of growth it agree withe (18). The T3 hormone was for chicken with concentrations in the normal range ,The pituitary gland and hunger stimulate the growth hormone. T3 by expressing types 2 and 5. Subtypes of somatostatin receptors reduce expression Trothotropin releasing hormone (TRH) either in vivo or in vitro in the chicken thalamus. (18,19,20,21).

CONCLUSION

Coccidiosis effect to the clinical pathology of the birdes but does not affect the level of growth hormones and to hormonal deficiency but the infection of parasite results lack of absorption of nutrients from the intestine for the damage caused by the

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 4, 2021, Pages. 3060 – 3068
Received 05 March 2021; Accepted 01 April 2021.

parasite in the lining of the intestine and the villi then the growth of the bird , as the cause of low hemoglobin concentrations is attributed to Control group positive for anemia in infected chickens with reduced feed intake and reduced absorption of nutrients to replace blood components,The rate of growth in poultry depends on a physiological "point". Other effects associated with the growth of thyroid hormones include Thyroid hormones stimulation of the development of the small intestine with thyroid hormone in laboratory T3 increases the rate of growth of infected young chickens per hour increased microfilaria growth and the rate of cell division in the epithelium in the and active glucose transport in the duodenum, T3 reduces HGH secretion by influences on both anterior pituitary

REFERENCES

1. Abed, ShahdSaadDahham; Shehab Ahmed Mhammed; Muhammad Abdul Aziz Qadir (2017) Study of the pathogenic effect of some parasites in the digestive system of broiler chickens in the city of Kirkuk, Tekrit University Journal for Agricultural Sciences Vol (17) No. (1)
2. Karawan, AsharJaffat (2012) A Study of the Most Important Parasites in Digestive Canna in Domestic Chicken in Al-Diwaniyah Governorate ,30-34 , Vol.3 , No. , Kufa journal for veterinary medical sciences , Issn-1813-1646.
3. Fontes, K. N., Cabanelas, A., Bloise, F. F., de Andrade, C. B. V., Souza, L. L., Wilieman, M., et al. (2017). Differential Regulation of Thyroid Hormone Metabolism Target Genes during Non-thyroidal Illness Syndrome Triggered by Fasting or Sepsis in Adult Mice Front. Physiol. 8:828. doi: 10.3389/fphys.2017.00828
4. Klein S. L (2004) .Hormonal and immunological mechanisms mediating sex differences ,Parasite Immunology 26, 247–264.
5. Al-Haboubi, Zainab Abdel Mohsen (2014): A physiological and biochemical study for children , Infected with the *Giardia Lamblia* parasite, and *Entamoebahistolytica* in the holy Karbala ,PhD thesis, Babylon University, College of Science.
6. Alrawe, Khashi Mahmoud and Khalaf Allah, Abdul Aziz Muhammad (2000). Design and analysis of agricultural experiments. Book House for Printing and Publishing, University of Mosul.

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 4, 2021, Pages. 3060 – 3068
Received 05 March 2021; Accepted 01 April 2021.

7. Shnawa,IsraaKadim(2009) Study of epidemiological and physiological of the causes diarrhea in Karbala city , Degree of Master of Scince in Biology / Microbiology, Scientific Research , University of Kerbala, College of Education.
8. Conlon, M.A. & Kita, K. (2002). Muscle protein synthesis rate is altered in response to a single injection of insulin-like growth factor-I in seven-day-old Leghorn chicks.Poultry Science, Vol. 81, No. 10, pp. 1543-1547, ISSN 1537-0437.
9. Darras, V.M., Rudas, P., Visser, T.J., Hall, T.R., Huybrechts, L.M., Vanderpooten, A., Berghman, L.R., Decuypere, E. &Kühn, E.R. (1993). Endogenous growth hormone controls high plasma levels of 3,3',5-triiodothyronine (T3) in growing chickens by decreasing the T3-degrading type III deiodinase activity. Domestic Animal Endocrinology, Vol. 10, No. 1, pp. 55-65, ISSN 0739-7240.
10. Scanes,Colin G. (2011) Hormones and Metabolism in Poultry University of Wisconsin Milwaukee,USA .
11. Al-Hussaini, Ismail (2004). Encyclopedia of Internal Medicine. Osama Printing and Publishing Jordan: 422 pages.
12. WHO. (2006). Diarrhoeal diseases refernceCD-rom., WHO, http: //www.who. int/ 1-26. Geneva.
13. Schmidt-Nielsen, K.(2007). Animal physiology,fifthedition,Cambridgeuniversitypress.(129-211).
14. Byerly, M.S., Simon, J., Lebihan-Duval, E., Duclos, M.J., Cogburn, L.A. & Porter, T.E. (2009).Effects of BDNF, T3, and corticosterone on expression of the hypothalamic obesity gene network in vivo and in vitro. American Journal of Physiology Regulatory Integrative Comparative Physiology, Vol. 296, No. 4, pp. R1180-1189, ISSN 0363-6143.
15. Collin A, Cassy, S., Buyse, J., Decuypere, E. & Damon, M. (2005). Potential involvement ofmammalian and avian uncoupling proteins in the thermogenic effect of thyroidhormones. Domestic Animal Endocrinology, Vol. 29, No.1, pp. 78-87, 0739-7240.
16. Black, B.L. (1988) Development of glucose active transport in embryonic chick intestine.Influence of thyroxine and hydrocortisone. Comparative

Biochemistry and PhysiologyA Comparative Physiology, Vol. 90, No. 3, pp.379-386, ISSN 1095-6433.

17. King, D.B. &Scanes, C.G. (1986). Effects of mammalian growth hormone and prolactin on the growth of hypophysectomized chickens. Proceedings of the Society of Experimental Biology and Medicine, Vol. 182, No. 2, pp. 201-207, ISSN 0037-9727.
18. Bowen, S.J., Huybrechts, L.M., Marsh, J.A. &Scanes, C.G. (1987). Influence oftriiodothyronine and growth hormone on growth of dwarf and normal chickens:interactions of hormones and genotype. Comparative Biochemistry and Physiology AComparative Physiology, Vol. 86, No. 1, pp. 137-142, ISSN 1095-6433.
19. De Groef, B., Grommen, S.V. &Darras, V.M. (2007). Feedback control of thyrotropin secretion in the chicken: thyroid hormones increase the expression of hypophysealsomatostatin receptor types 2 and 5. General and Comparative Endocrinology, Vol. 152,No. 2-3, pp.178-182, ISSN 0016-6480.
20. Al-Zubaidi, Halim Hamzah Hussein (2015) Isolation and diagnosis of some external and internal parasites in domestic chickens in Diyala Governorate, Al-Qadisiyah Journal of Veterinary Medicine Sciences Volume 14 Issue 2.
21. Al-Zughaibi, Ihsan Muhammad Salabi, Ali Karim Hassan Al-Gharawi (2010) A field study on the spread of parasites in the gut in the domestic chicken in Babil Governorate, the Journal of the University of Karbala Scientific, Volume VIII second issue, scientific

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 4, 2021, Pages. 3060 – 3068
Received 05 March 2021; Accepted 01 April 2021.

Table showing the statistical analysis of the results of serum samples testing for birds infected with Coccidia parasites)

		Firretin ng/ml	T3 nmol / L thyroxin hormone	Thyrionin hormone T4 test nmol/L	(TSH) thyroid stimulation testui U/ml	GH test ng / ml
Firretin ng/ml	Pearson Correlation	1	-.082-	-.089-	.666**	.983**
	Sig. (2-tailed)		0.668	0.639	0	0
	N	30	30	30	30	30
T3nmol / L thyroxin hormone assay results T3nmol/L	Pearson Correlation	-.082-	1	.944**	-.109-	-.097-
	Sig. (2-tailed)	0.668		0	0.567	0.611
	N	30	30	30	30	30
Thyrionin hormone T4 test nmol/L	Pearson Correlation	-.089-	.944**	1	-.177-	-.117-
	Sig. (2-tailed)	0.639	0		0.349	0.539
	N	30	30	30	30	30
(TSH) thyroid stimulation test resultsui U/ml	Pearson Correlation	.666**	-.109-	-.177-	1	.641**
	Sig. (2-tailed)	0	0.567	0.349		0
	N	30	30	30	30	30
GH test results ng / ml	Pearson Correlation	.983**	-.097-	-.117-	.641**	1
	Sig. (2-tailed)	0	0.611	0.539	0	
	N	30	30	30	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

The results of a statistical analysis of the hormones taken in the study, compared with the control group, show the direct, inverse, and moral relationship