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Hematological Profile Of Lingnan, Kedu, Bangkok, And Arabic Chickens And Cycle Blood Analysi

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Abstract—*The aim of this study was to determine the effect of hematological profile of lingnan, kedu, bangkok, and arabic cyycel blood of chickens. The material used during this research was semen, collected from 4 different cock of Lingnan, Arabian, Kedu and Bangkok crossbred. The research was arranged in a randomized block design factorial with four treatments, four diluting times and five replications. The treatments on four breeds with dilution NaCl fisiologis and Egg Yolk. The result of this paper is In Lingnan chicken, there is an not significant relationship between dilution and dilution*time variables (p-value = 0.998 > 0.05). In Bangkok chicken, there is an not significant relationship between dilution and dilution*time variables (p-value = 0.801 > 0.05). In Kedu chicken, there is an not significant relationship between dilution and dilution*time variables (p-value = 0.163 > 0.05). In Arabics chicken, there is an not significant relationship between dilution and dilution*time variables (p-value = 0.965 > 0.05). In combined four chicken, there is an not significant relationship breed*dilluet*time variables (p-value = 0.987> 0.05).*

Key Words: *Hematological, Lingnan, Kedu, Bangkok, And Arabic Chicken, Cycle Blood*

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I. INTRODUCTION

The blood test contains a cumulative number of white blood cells, red blood cells and platelets. Hematological test is a blood count. One of the examinations enabling the diagnosis or monitoring of treatment findings is the hematology exam. The blood cells' illness, such as cancers, anemia and leukemia, is observed in hematology to diagnose certain health problems. This test can also be used to track the progression of diseases and the results of treatment. (The Photographer, 2018). The ambient temperature of circumstances is one external factor that can influence chickens productivity. The poultry sector has become one of the key concerns about the warm temperature in an area because it could cause financial losses by rising mortality rates or decreasing productivity. In environmental maintenance, relatively high temperatures lead to stress heat in grilling agents (Austic, 2000). Physiology and body metabolism in order to protect themselves with creation of established homeostatic systems are under stress, During chickens are under stress (Alfian, 2017).

Lingnan chicken is a Chinese domestic chicken. This large-corporated chicken has many advantages, including fast growth, low feed and high productivity for women. Due to these benefits, Lingnan chicken in Indonesia is very well grown. Throug this novel, the author tries intensively and semi-intensively to introduce Lingnan chickens and their rearing (Maldini, 2019).

Kedu Chicken is already common and has certain features and productivity advantages as compared to native chicken in general, and is one of the genetic resources for local native Temanggung Regency animals. For generations in the Temanggung region Kedu chicken was cultivated by the group. Kedu chicken has high egg production, quick growth, and its own singularity, as black kedu chickens are called Cemani Chicken all over its body, beginning with the feathers, feet, skin, pebbles, wattle, oral cavity and meat. By benefiting from these benefits, the people of Temanggung Regency have shown that Kedu Chicken contributed to food supply and to the growth of employment, thus growing income for farmers (Ulupi, 2014).

Bangkok chicken is a chicken breed from Thailand that is commonly referred to as chicken fighters. Bangkok chickens have the benefit of environmental adaptation (climate change), long, muscular body and strong muscles. These benefits have made chicken Bangkok publicly famous. But it's very hard to find the original chicken of Bangkok, as a result of cross breeding with various types of chicken, the original genes of Bangkok chicken have been circulating on the market. This is why original chicken Bangkok is very rare; the price is completely costly if somebody sells it(Chinarasri, 2007).

The Origin of Arabic Chickens. This Chicken is a Belgian descendant of Brakel Kriel-Silver Chicken. The male has great sex strength and his presence in Indonesia, through eggs made by those who travel to Mecca. It has two explanations why it is known as the Arabic Chicken. Many people use Arab chickens because their egg production is high and the weight of an egg of 42.3 grams is about 190-250 eggs per year. Egg yolks are heavier and constitute 53.2% of the total weight of the egg. The shell colors, white, yellowish and brown, differ

widely. Blackish skin colour with fine beef, more rarely used as meat than free range chicken (Weiss, 2010).

Blood cycle picture will experience Shift physiologically with change. Physiological changes may be attributed to internal factors such as age rise, diet, exercise, fitness, stress, estrous cycles and body temperature, and external factors such as germ infection and environmental temperature changes. Chicken blood can be used to see health conditions of chicken (Mutmainna, 2017).

This study explores the influence of lingnan, kedu, bangkok, and arabic chickens and the blood cycle hematology profile.

II. MATERIAL AND METHODS

This research performed in Poultry Breeding Center-Temanggung and Laboratory of Animal Genetics-Breeding and Reproduction the Faculty of Animal and Agricultural Sciences, Diponegoro University.

Research Materials

The material used during this research was semen, collected from 4 different cock of Lingnan, Arabian, Kedu and Bangkok crossbred. The ingredient that used including egg yolk, aqua bidest, eosin 0,2%, and test tube (Isroli, 2009). The tools that used were test tube to process the semen collecting, water heater, scaled tube to figure out the volume of the semen that could be produced, universal indicator paper to find out the acidic degree, microscope to observe the motility, object glass, deck glass, bunsen, beaker glass, filter paper, glass measurement to dilute the semen, and stationery to note the acquiring results (Saffar, 2008).

Research Method

Research Design

The research was arranged in a randomized block design factorial with four treatments, four diluting times and five replications. The treatments on four breeds with dilution NaCl fisiologis and Egg Yolk.

Treatment A : control with dilution NaCl;
Treatment B : dilution with NaCl + 10% Egg Yolk;
Tratement C : dilution with NaCl + 15% Egg Yolk; and
Treatment D : dilution with NaCl + 20% Egg Yolk.

Research Procedure

Method that used in the data collection consists of several steps, those are:(

a. Research preparation phase included the preparation of the material and preparation tools.
b. Material procurement. Material procurement begun with preparing for the male chicken in order to collect sperm. After that, held the semen storage preparations.
c. Adaptation process. The process of adaptation include adaptive the male cock for semen collection using massage method in order to get out semen, semen storage carried out in the morning.
d. Equipment preparation. Preparation equipment was cleaning up all the equipments, and preparing research materials.
e. Data collection process. The parameters that being used were the volume of semen, semen concentration, and sperm motility. Spermatozoa motility could be measured by dropping the semen in the middle of object glass than covered it with deck glass, and observed it under the microscope with magnificent of 10 X 40.

Lignan Chicken

Arabic Chicken

Kedu Chicken

Bangkok Chicken

Semen Collection

Research Parameter

The parameter that used in this research are semen volume, semen concentration, and sperm motility.

Data Analysis

The linear model of experimental design was as follows:

$Y_{ijk} = \mu + \alpha_i + \beta_i + (\alpha\beta)_{ij} + \varepsilon_{ijk}$

Description:

Y_{ijk} = Observation value in the *i*-the breed factor, *j*-the dilution factor and *k*-the replication.
i = 1, 2, 3, 4
j = 1, 2, 3, 4
k = 1, 2, 3, 4, 5
μ = Average value of observations.
α_i = Effect of *i*-the breed factor.

β_i = Effect of *j*-the dilution factor.
$(\alpha\beta)_{ij}$ = Interaction effect of its breed factor and its dilution factor
ε_{ijk} = Error to the trial of *i*-the breed factor, j-the dilution factor and *k*-the replication

The hypothesis was tested with analysis of univariate variance, while mean comparison after significant treatment effects was done with Duncan Multiple Range Test.
H0: $\alpha_1\beta_1 = \alpha_2\beta_2 = \alpha_3\beta_3 = ... = \alpha_i\beta_j = 0$, meaning that there was no effect of dilution with NaCl and egg yolk on sperm motility of Lingnan, Bangkok, Kedu and Arabic chicken.
H1: at least one $\alpha_i\beta_j \neq 0$, meaning no additional effect of dilution with NaCl and egg yolk on sperm motility of Lingnan, Bangkok, Kedu and Arabic chicken.

The data were analyzed of variance by F test and if there was a significant treatment effect, would then be followed by the Duncan multiple range test to determine the differences between treatments. Criteria for decision-making on the level of 95% or $\alpha = 0.05$ if F count> F table then H was rejected and H1 accepted.

III. RESULT AND DISCUSSION

This is as Semen Concentration of Lingnan, Kedu, Bangkok, and Bangkok Chicken

Table 1. Volume Semen Chicken

Replication	Volume of semen chicken			
	Lingnan	Bangkok	Kedu	Arabic
	ml/ejaculation			
1	0.5	0.8	0.5	0.2
2	1.0	0.4	0.6	0.1
3	0.5	0.4	0.5	0.3
4	0.9	0.4	0.3	0.1
5	0.9	0.4	0.5	0.2
Total (Σ)	3.8	2.4	2.4	0.9
Average	0.76	0.48	0.48	0.18

There are 5 replications in the volume of chicken semen which have been grouped into 4 types, namely Lingnan, Bangkok, Kedu, and Arabic. The total volume of chicken semen contained results of Lingnan 3.8, Bangkok 2.4, Kedu 2.4, and Arabic 0.9. The average lingnan was 0.76, Bangkok 0.48, second 0.48, and Arabic 0.18.

Semen Concentration of Lingnan, Kedu, Bangkok and Arabic Chicken

Table 2. Semen Concentration Chicken

Replication	Semen concentration of chicken			
	Lingnan	Bangkok	Kedu	Arabic
	x 10^7 sperm ml/ejaculate			
1	246	190	205	247
2	222	126	308	205
3	185	153	171	239
4	363	236	324	334
5	283	220	345	201
Total (Σ)	1299	925	1353	1226
Average	259.8	185	270.6	245.2

Table 2 there ara 5 replications on the concentration of sement chicken which have been grouped into 4 types, namely Lingnan, Bangkok, Kedu, and Arabic. The total concentration of cement chicken contains lingnan 1299, bangkok 925, second 1353, and arabic 1226. With an average lingnan of 259.8, Bangkok 185, second 270.6, and arabic 245.2.

Table 3. Sperm Motility of Lingnan Chicken

No	Replication Of Chicken	Treatments	Motility				
			0 Minute (%)	30 Minute (%)	60 Minute (%)	90 Minute (%)	120 Minute (%)
1	LINGNAN 1	T0	80	75	65	40	35
		T1	80	75	60	50	40
		T2	80	75	70	50	35
		T3	80	75	70	50	40
2	LINGNAN 2	T0	80	70	70	70	50
		T1	70	65	65	60	50
		T2	75	65	50	50	45
		T3	70	65	65	55	40
3	LINGNAN 3	T0	85	85	80	70	70
		T1	80	70	65	65	65
		T2	80	70	60	60	60
		T3	75	70	65	60	60
4	LINGNAN 4	T0	80	75	75	60	60
		T1	80	75	75	75	50
		T2	80	75	75	60	50
		T3	80	75	75	70	60
5	LINGNAN 5	T0	85	80	80	80	70
		T1	80	75	70	70	40
		T2	85	80	80	70	70
		T3	80	80	60	60	60

Information:
T0 : Dilution with NaCl
T1 : Dilution with NaCl + 10 % Egg yolk
T2 : Dilution with NaCl + 15 % Egg yolk
T3 : Dilution with NaCl + 20 % Egg yolk

In Lingnan 1, the treatment for dilution with T0 treatment at 0 minutes with a percentage of 80% was the highest, while the 120th minute was the lowest with a percentage of 35%. T1 at minute 0 with a percentage of 80% is the highest, while minute 120 is the lowest with a percentage of 40%. T2 at minute 0 with a percentage of 80% is the highest while minute 120 is the lowest with a percentage of 35%. T3 at minute 0 with a percentage of 80% is the highest, while minute 120 is the lowest with a percentage of 40%.

Table 4. Sperm Motility of Bangkok Chicken

No	Replication Of Chicken	Treatments	Motility				
			0 Minute (%)	30 Minute (%)	60 Minute (%)	90 Minute (%)	120 Minute (%)
1	BANGKOK 1	T0	80	70	70	65	30
		T1	80	65	75	50	50
		T2	80	70	65	55	40
		T3	80	70	65	60	40
2	BANGKOK 2	T0	75	60	50	40	40
		T1	70	60	60	40	35
		T2	70	65	55	35	30
		T3	70	65	50	40	35
3	BANGKOK 3	T0	85	85	85	70	70
		T1	70	70	65	50	55
		T2	70	65	65	60	50
		T3	70	70	70	55	50
4	BANGKOK 4	T0	80	70	65	55	40
		T1	80	70	70	60	30
		T2	80	80	60	60	30
		T3	75	75	65	55	25
5	BANGKOK 5	T0	85	80	75	75	70
		T1	80	75	75	40	40
		T2	80	80	70	60	45
		T3	80	75	70	70	15

Information:
T0 : Dilution with NaCl
T1 : Dilution with NaCl + 10 % Egg yolk
T2 : Dilution with NaCl + 15 % Egg yolk
T3 : Dilution with NaCl + 20 % Egg yolk

In Bangkok chicken, the treatment for dilution with T0 treatment at 0 minutes with a percentage of 80% was the highest, while the 120th minute was the lowest with a percentage of 30%. T1 at minute 0 with a percentage of 80% is the highest while minute 120 is the lowest with a percentage of 50%. T2 at minute 0 with a percentage of 80% is the highest, while minute 120 is the lowest with a percentage of 40%. T3 in the 0th minute with a percentage of 80% is the highest while the 120th minute is the lowest with a percentage of 40%.

Table 5. Sperm Motility of Kedu Chicken

No	Replication Of Chicken	Treatments	Motility				
			0 Minute (%)	30 Minute (%)	60 Minute (%)	90 Minute (%)	120 Minute (%)
1	KEDU 1	T0	85	80	80	75	70
		T1	80	70	70	65	60
		T2	80	70	70	65	50
		T3	80	75	65	55	40
2	KEDU 2	T0	75	70	70	60	45
		T1	80	65	55	55	45
		T2	70	70	65	55	35
		T3	80	80	60	50	45
3	KEDU 3	T0	85	75	70	65	60
		T1	85	75	65	55	55
		T2	80	80	65	60	35
		T3	80	80	70	55	50
4	KEDU 4	T0	80	75	65	60	60
		T1	80	75	50	40	40
		T2	80	75	70	60	45
		T3	80	80	60	40	40
5	KEDU 5	T0	85	75	75	75	65
		T1	85	80	75	75	40
		T2	75	70	70	70	50
		T3	70	70	65	65	60

Information:
T0 : Dilution with NaCl
T1 : Dilution with NaCl + 10 % Egg yolk
T2 : Dilution with NaCl + 15 % Egg yolk
T3 : Dilution with NaCl + 20 % Egg yolk

In the second 1 treatment for dilution with the T0 treatment at 0 minutes with a percentage of 85% was the highest while the 120th minute was the lowest with a percentage of 70%. T1 at minute 0 with a percentage of 80% is the highest, while minute 120 is the lowest with a percentage of 60%. T2 at minute 0 with a percentage of 80% is the highest, while minute 120 is the lowest with a percentage of 50%. T3 at minute 0 with a percentage of 80% is the highest, while minute 120 is the lowest with a percentage of 40%.

Table 6. Sperm Motility of Arabic Chicken

No	Replication Of Chicken	Treatments	Motility				
			0 Minute (%)	30 Minute (%)	60 Minute (%)	90 Minute (%)	120 Minute (%)
1	ARAB 1	T0	70	65	65	65	65
		T1	75	70	60	60	50
		T2	75	75	65	65	65
		T3	70	65	60	60	60
2	ARAB 2	T0	70	45	45	45	40
		T1	75	70	70	70	60
		T2	70	70	70	70	70
		T3	60	60	50	50	40
3	ARAB 3	T0	75	75	65	60	60
		T1	60	60	60	60	60
		T2	70	65	65	50	45
		T3	75	70	50	45	45
4	ARAB 4	T0	80	80	75	75	70
		T1	80	80	70	65	60
		T2	80	75	75	60	50
		T3	70	70	65	60	60
5	ARAB 5	T0	80	70	70	70	70
		T1	70	70	70	60	40
		T2	65	60	60	60	45
		T3	75	70	70	50	45

Information:
T0 : Dilution with NaCl
T1 : Dilution with NaCl + 10 % Egg yolk
T2 : Dilution with NaCl + 15 % Egg yolk
T3 : Dilution with NaCl + 20 % Egg yolk

In Arabic 1, the treatment for dilution with T0 treatment at 0 minutes with a percentage of 70% was the highest while the 120th minute was the lowest with a percentage of 65%. T1 at minute 0 with a percentage of 75% is the highest, while minute 120 is the lowest with a percentage of 50%. T2 at minute 0 with a percentage of 75% is the highest, while minute 120 is the lowest with a percentage of 65%. T3 at minute 0 with a percentage of 70% is the highest while minute 120 is the lowest with a percentage of 60%.

Table 7. Variance Analysis of Lingnan Chicken

Tests of Between-Subjects Effects

Dependent Variable: Lignan Chicken

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3598,051[a]	19	189,371	6,908	,000
Intercept	305753,702	1	305753,702	11152,772	,000
Dilution	189,153	3	63,051	2,300	,084
Time	3340,123	4	835,031	30,459	,000
Dilution * Time	68,775	12	5,731	,209	,998
Error	2193,203	80	27,415		
Total	311544,956	100			
Corrected Total	5791,254	99			

a. R Squared = ,621 (Adjusted R Squared = ,531)

In Lingnan chicken, there is an not significant relationship between dilution and dilution*time variables (p-value = 0.998 > 0.05). For the intercept and time variables the results are accepted. The following is a curve for the estimated marginal means of lignan chicken:

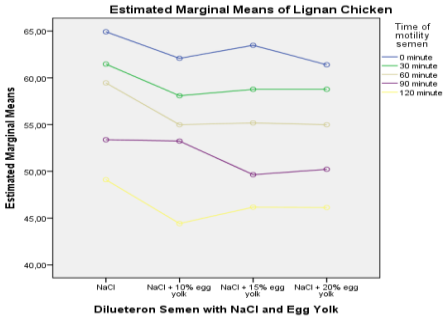


Figure 1. Estimate Means of Lignan Chicken

Table 8. Variance Analyze of Bangkok Chicken

Tests of Between-Subjects Effects

Dependent Variable: Bangkok Chicken

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	6531,919[a]	19	343,785	10,147	,000
Intercept	272568,571	1	272568,571	8045,200	,000
Dilution	316,715	3	105,572	3,116	,031
Time	5954,756	4	1488,689	43,941	,000
Dilution * Time	260,448	12	21,704	,641	,801
Error	2710,372	80	33,880		
Total	281810,862	100			
Corrected Total	9242,291	99			

a. R Squared = ,707 (Adjusted R Squared = ,637)

In Bangkok chicken, there is an not significant relationship between dilution and dilution*time variables (p-value = 0.801 > 0.05). For the intercept and time variables the results are accepted. The following is the curve of the Estimated Marginal Means of Bangkok Chicken:

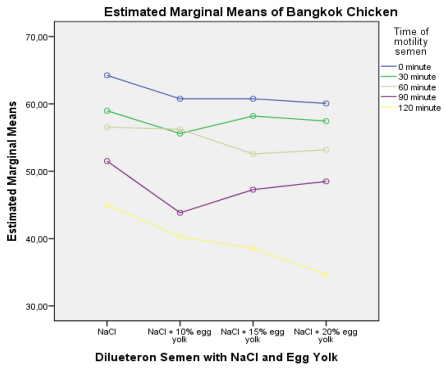


Figure 2. Estimate Means of Bangkok Chicken

Table 9. Variance Analyze of Kedu Chicken

Tests of Between-Subjects Effects

Dependent Variable: Kedu Chicken

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4925,199[a]	19	259,221	14,770	,000
Intercept	299240,727	1	299240,727	17050,600	,000
Dilution	325,108	3	108,369	6,175	,001
Time	4295,399	4	1073,850	61,187	,000
Dilution * Time	304,693	12	25,391	1,447	,163
Error	1404,013	80	17,550		
Total	305569,939	100			
Corrected Total	6329,212	99			

a. R Squared = ,778 (Adjusted R Squared = ,725)

In Kedu chicken, there is an not significant relationship between dilution and dilution*time variables (p-value = 0.163 > 0.05). For intercept, dilution, and time variables the results are accepted. The following is the curve of the estimated marginal means of both chicken:

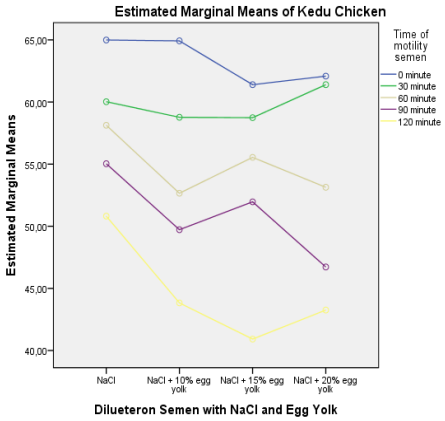


Figure 3. Estimate Means of Kedu Chicken

Table 10. Variance Analyze of Arab Chicken

Tests of Between-Subjects Effects

Dependent Variable: Arab Chicken

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1660,040[a]	19	87,371	3,416	,000
Intercept	283194,266	1	283194,266	11072,893	,000
Dilution	211,979	3	70,660	2,763	,047
Time	1329,905	4	332,476	13,000	,000
Dilution * Time	118,156	12	9,846	,385	,965
Error	2046,036	80	25,575		
Total	286900,341	100			
Corrected Total	3706,076	99			

a. R Squared = ,448 (Adjusted R Squared = ,317)

In Arabics chicken, there is an not significant relationship between dilution and dilution*time variables (p-value = 0.965 > 0.05). On the intercept variable, and the time the results are received. The following is a curve for the Estimated Marginal Mean of Arabic Chicken:

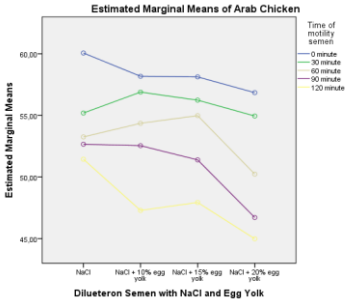


Figure 4. Estimate Means of Arab Chicken

Table 11. Variance Analyze Between 4 Breed of Chicken

Tests of Between-Subjects Effects

Dependent Variable: Motility of semen

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	17306,522[a]	79	219,070	8,392	,000
Intercept	1160165,952	1	1160165,952	44442,160	,000
Breed	591,313	3	197,104	7,550	,000
Diluet	889,682	3	296,561	11,360	,000
Time	13961,367	4	3490,342	133,704	,000
Breed * Diluet	153,273	9	17,030	,652	,752
Breed * Time	958,815	12	79,901	3,061	,000
Diluet * Time	245,500	12	20,458	,784	,667
Breed * Diluet * Time	506,571	36	14,071	,539	,987
Error	8353,624	320	26,105		
Total	1185826,098	400			
Corrected Total	25660,146	399			

a. R Squared = ,674 (Adjusted R Squared = ,594)

In combined four chicken, there is an not significant relationship breed*dilluet*time variables (p-value = 0.987> 0.05). Meanwhile breed*dilluet*time are the accepted variables. The following is a graphical result that shows the combination of these tests:

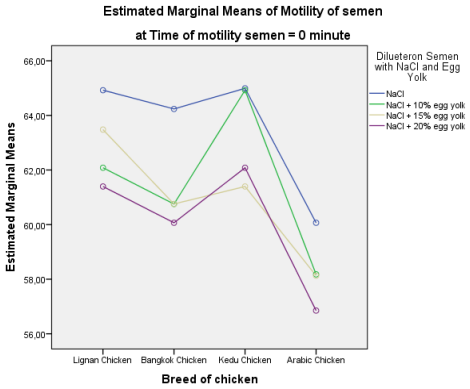


Figure 5. Estimate Means of Motility of Semen 0 minute

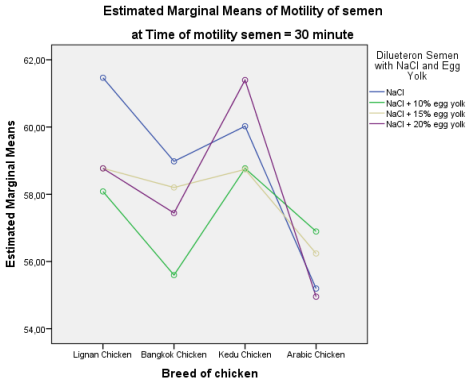


Figure 6. Estimate Means of Motility of Semen 30 minute

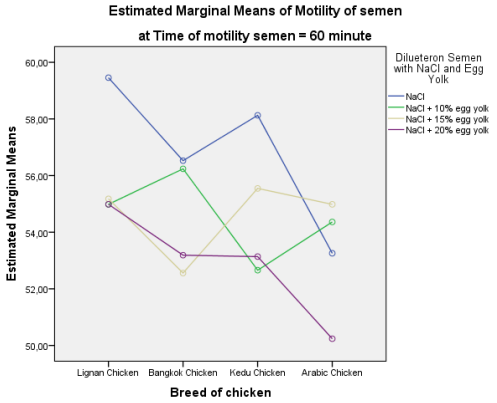
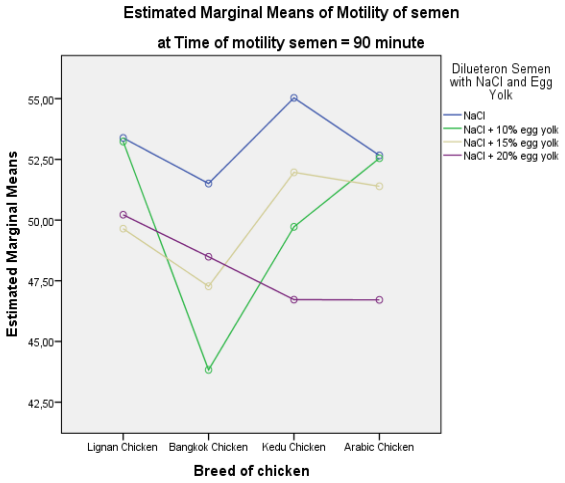


Figure 7. Estimate Means of Motility of Semen 60 minute



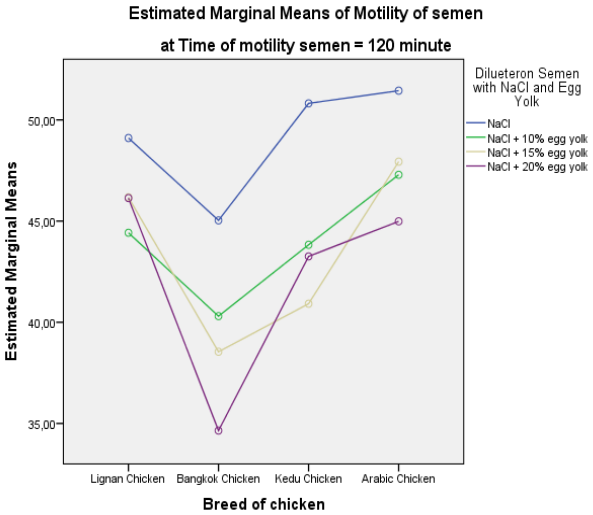


Figure 8. Estimate Means of Motility of Semen 120 minute

Table 12. Analysis Of Chicken Blood

Age	Mr. Per 100 cc										
	Urea-N	Non-Protein	Creatinine	Uric Acid	Glucose	Sodium	Plasma Chloride	Cell Chloride	Total Solids	Ash	Refractive index
January	3,05	4,05	3,05	4,01	244	355	354	244	178	1,06	1,3456
February	3,14	4,14	3,16	3,15	235	384	348	235	176	1,01	1,3455
March	3,07	4,07	4,07	3,33	252	354	418	252	167	1,09	1,3456
April	4,05	5,05	3,07	3,05	227	352	408	243	157	1,11	1,3489
May	4,14	5,14	4,05	3,16	211	355	417	234	154	1,03	1,3521
June	4,07	5,07	4,14	4,07	201	384	392	251	189	0,89	1,3651
July	5,05	3,05	3,49	4,05	244	354	420	242	172	0,56	1,4523
August	5,14	3,16	3,11	3,14	235	348	410	233	198	0,53	1,3578
September	3,14	4,14	3,87	3,23	252	364	419	250	158	0,46	1,6349
October	1,14	2,14	3,14	4,14	211	352	394	241	141	0,14	1,2569
November	3,07	4,07	3,05	3,17	201	355	422	232	198	0,45	1,3452
December	3,07	4,07	3,16	3,29	244	340	412	249	190	1,68	1,3458

One of the factors that affect the amount of hemoglobin is the high and low oxygen content in the blood. Low oxygen content causes an increase in hemoglobin production and the number of erythrocytes. This is confirmed by the opinion that hemoglobin levels are influenced by oxygen levels and the number of erythrocytes so that there is a tendency that if the number of erythrocytes is low, the hemoglobin level will be low and if oxygen in the blood is low, the body stimulates an increase in erythrocyte and hemoglobin production.

Another function of the hematocrit is to measure the proportion (size) of red blood cells (erythrocytes), because hematocrit can measure erythrocyte concentration. That an increase or decrease in hematocrit in blood affects blood viscosity, the greater the percentage of hematocrit, the more friction that occurs in the blood circulation in various layers of blood and this friction determines the viscosity, therefore blood viscosity increases simultaneously. the hematocrit also increases.

The erythrocyte count, hemoglobin levels in the treatment were classified as high compared to the normal hemoglobin levels in chickens, while the hematocrit value for each treatment was low compared to the normal hematocrit value probably due to the large size of chicken blood cells. If the hematocrit value is low, it is possible that the concentration of chicken blood cells will be high, followed by a high number of erythrocytes so that the ability to bind oxygen by hemoglobin will also be high. This is in accordance with the opinion that hematocrit describes the volume or size of red blood cells. Explained that the hematocrit value is a method often used in determining the number of red blood cells that is too high. The higher the red blood cells, the higher the hemoglobin level. High red blood cells are closely related to the ability to bind oxygen by hemoglobin to be channeled into body cells and remove carbon dioxide from body cells.

V.CONCLUSION

This means that there is an effect of dilution with NaCl and egg yolk on the sperm motility of Lingnan, Bangkok, Kedu and Arab chickens. This means that there is no additional effect of NaCl dilution and egg yolk on the sperm motility of Lingnan, Bangkok, Kedu and Arab chickens.

Data analysis of variance with the F test and if there is a significant effect of treatment, then analysis with Duncan's multiple range test to see the differences between treatments.

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