

## Determination of Persian Cats Health Status (*Felis Silvestris*) of Eritrocytes, Hemoglobin and Leucocytes after Domestic Cat Blood Transfusion (*Felis Domestica*)

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### ABSTRACT

Broken bones, torn wounds, uterine surgery, physiological disorders that lead to clinical symptoms of anemia can be performed medical treatment for blood transfusion. Animals used in this study, domestic cats (*Felis domestica*) as many as 5 heads with blood type A, 5 blood type B and Persian cats (*Felis silvestris*) as many as 5 blood types A, 5 blood type B, healthy condition and aged between 1 and 2 years. The sex used by female cats. The transfusion process begins with taking local cat blood (*Felis domestica*) as a donor, in the femoral vein as much as 2% of body weight, blood collected by using a 1 cc syringe and a collector tube containing EDTA. Then the blood collected from the donor collection was transferred to the Persian race cat (*Felis silvestris*) as recipients as much as 2% of body weight, through the femoral vein with 1 cc syringe. After 24 hours of the transfusion process, blood samples were taken to check for recusions, erythrocyte levels, level hemoglobin and leukocyte levels. The results obtained the health status of a domestic cat (*Felis domestica*) before being transfused with an interval, erythrocyte ( $10^6/\mu\text{L}$ ) 10.40-11, Hemoglobin (Hb) 9.12 - 11.3 g/dl, leukocytes ( $10^3/\mu\text{L}$ ) 11.08-16.56. After transfusion to Persian cats (*Felis silvestris*) was obtained, erythrocytes ( $10^6/\mu\text{L}$ ) 10.48-13.99, Hemoglobin (Hb) 11.4-17.9 g/dl, Leukocytes ( $10^3\mu\text{L}$ ) 12.8 - 17.6, Rhesus negative (Rh-), the process of blood transfusion does not cause allergic reactions and hypotension.

**KEY WORDS:** Persian cats, domestic cats, blood type and blood transfusion

### INTRODUCTION

Naturally, cats have alloantibodies in the plasma, so the donor and recipient blood groups must be identified and cross matched before the first transfusion is performed. Unsuitable transfusions will be life threatening due to hemolytic transfusion reactions. Transfusion reactions can be minimized by performing blood typing and compatibility testing between donor and recipient, infectious disease screening of donors, and by instituting appropriate blood collection, processing, storage, and administration techniques [1]. The aims transfusion to replace the missing component of blood (leukocytes, red blood cells, platelets, and proteins plasma including clotting factors) and in the case of several diseases like haemorrhage, anaemia, ineffective erythropoiesis or haemolysis and to increase oxygen carrying capacity [2], feline leukaemia virus (FeLV) infection and feline immunodeficiency virus (FIV) [3]. Feline blood groups are described by the AB system and include blood types A, B and AB; cats without A or B antigens have not been identified. Type A is the most common domestic cat blood type with a frequency of 73.3–100% which varies with geographical location [4,5,6,7]. Transfusion medicine in small animal practice has become more feasible with improved access to blood products through either on-site donors, external donor in this programs, the purchase of blood bank products, blood transfusion or the availability of blood component, blood substitutes, and adverse reactions [8].

### MATERIALS AND METHODS

Animals used in this study, domestic cats (*Felis domestica*) as many as 5 heads with blood type A, 5 blood type B and Persian cats (*Felis silvestris*) as many as 5 blood types A, 5 blood type B, healthy condition and aged between 1 and 2 years. The sex used by female cats. The transfusion process begins with taking local cat blood (*Felis domestica*) as

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a donor, in the femoral vein as much as 2% of body weight, blood collected by using a 1 cc syringe and a collector tube containing EDTA. Then the blood from the donor collection was transfused in Persian race cat (*Felis silvestris*) as recipient as much as 2% of body weight, through the femoral vein drop by drop according to the pulsus frequency. After 24 hours of the transfusion process, blood samples were taken to check for levels erythrocytes, hemoglobin levels and leukocyte levels.

### Data Analysis

Analysis of data: the data obtained is processed descriptively

## RESULTS

### Results of Eritrocytes, Hemoglobin (Hb) and Leukocytes Examination of Domestic Cats (Donors)

The results of assay the levels of Erythrocytes, Hemoglobin (Hb) and Leukocytes are listed in table 1

**Table 1. Results of Erythrocytes, Hemoglobin (Hb) and Leukocytes Examination of Local Cats (Donors)**

NO	CATS	QUANTITIES			
		Blood Types	Erythrocytes (10 <sup>6</sup> / $\mu$ L)	Hb (g/dl)	Leukocytes (10 <sup>3</sup> / $\mu$ L)
1	Domestic Cat 1	A	10.40	9.89	16.56
2	Domestic Cat 2	A	10.58	10.04	11.08
3	Domestic Cat 3	A	11.04	10.32	15.20
4	Domestic Cat 4	A	10.55	10.9	13.78
5	Domestic Cat 5	A	11.32	11.3	12.66
6	Domestic Cat 6	B	10.90	11.1	15.52
7	Domestic Cat 7	B	11.07	10.5	14.72
8	Domestic Cat 8	B	11.22	10.2	12.03
9	Domestic Cat 9	B	10.59	10.33	11.98
10	Domestic Cat 10	B	11.62	9.12	12.79

**Table 2. Erythrocytes, Hemoglobin (Hb) and Leukocytes Examination of Persian Cats (After Blood Transfusion)**

NO	CATS	QUANTITIES			
		Blood Types	Erythrocytes (10 <sup>6</sup> / $\mu$ L)	Hb (g/dl)	Leukocytes (10 <sup>3</sup> / $\mu$ L)
1	Persian Cat 1	A	13.49	16.8 g/dl	17.6
2	Persian Cat 2	A	10.48	11.4 g/dl	12.8
3	Persian Cat 3	A	11.74	14.4 g/dl	16.00
4	Persian Cat 4	A	13.55	17.9 g/dl	16.9
5	Persian Cat 5	A	12.72	14.8 g/dl	17.5
6	Persian Cat 6	B	13.99	16.1 g/dl	15.40
7	Persian Cat 7	B	13.77	16.5 g/dl	14.8
8	Persian Cat 8	B	13.84	17.7 g/dl	15.3
9	Persian Cat 9	B	12.89	14.5 g/dl	14.89
10	Persian Cat 10	B	12.67	14.0 g/dl	14.09

## DISCUSSION

Anemia in the case of hemorrhage occurs because large amounts of blood loss can cause the number of erythrocytes to decrease drastically. Erythrocytes possess glycoproteins or glycolipids as particular antigens on the surface of their cell membranes that allow their classification into groups of blood [8]. Erythrocyte levels in male cats are higher than female cats [9].

Based on the results of this study, it was shown that erythrocyte levels in Persian cats before transfusion ranged from 10.40 - 11.62 (10<sup>6</sup> /  $\mu$ L), and after the transfusion process showed levels of 10.48 - 13.99 (10<sup>6</sup> /  $\mu$ L). The transfusion process from a local cat to Persian cats shows a relatively stable erythrocyte level. The normal erythrocyte level in domestic feline is 5.0-10.0 (10<sup>6</sup> /  $\mu$ L) [10]. Hemoglobin (g / dl) levels in Persian cats before transfusions range from 9.12 to 11.3, and after the transfusion process shows levels of 14.0-17.9. The transfusion process from a local cat to Persian cats shows a relatively higher Hemoglobin level. Normal Hemoglobin (g / dl) level in domestic feline is 8-15. The normal erythrocyte level in domestic feline is 5.0-10.0 (10<sup>6</sup> /  $\mu$ L). Leukocytes (10<sup>3</sup> /  $\mu$ L) in Persian cats before transfusion ranged from 11.08 -16.56, and after the transfusion process showed levels of 12.8 -17.6. The

transfusion process from a local cat to Persian cats shows relatively stable levels of Leukocytes. Leukocytes ( $10^3 \mu\text{L}$ ) range of domestic normal feline levels are 5.5-19.2 [10].

According to [11] Leukocytosis produced by the existence of a psychological and / or physical activity is called physiological leukocytosis. This situation often occurs in conditions of physical (emotional) stress, emotional or disease, and is usually temporary.

Blood transfusion is one way to increase blood cells due to anemia. But there are many potential risks and possible complications with transfusion, which can outweigh the benefits. Red blood cell (erythrocyte) transfusions in veterinary medicine are increasingly being used and are an important part of dealing with critical illness. In general, transfusion is used as a medical measure due to anemia due to acute bleeding or blood loss during surgery, hemolysis of drugs or toxins, immune-mediated diseases, severe non-regenerative conditions, and neonatal isoerythrolysis. Various types of blood are present in pets, and new antigens are found [12].

According to [13] IgE-mediated allergen reactions caused by soluble substances in donor plasma that bind to preformed IgE antibodies on mast cells in the recipient, resulting in activation and release of histamine. Complement fixation with IgG causes the release of anaphylotoxin. Clinical symptoms of itching in transfusion can interfere with the transfusion process and can be continued when the clinical symptoms disappear, as well as symptoms of hypoxia, gastrointestinal symptoms or hypotensive patients, transfusion should be stopped.

## CONCLUSION

After the blood transfusion process of domestic cat (*Felis domestica*) as donor to Persian race cat (*Felis silvestris*) as recipient, status was obtained with erythrocyte levels 11.74-13.99  $10^6 \mu\text{L}$ , Hemoglobin (Hb) 11.4-17.9 g / dl, Leukocytes 12.8 - 17.5  $10^3 \mu\text{L}$ , Rhesus negative (Rh-), this condition is still in the normal interval for the health of Persian race cats (*Felis silvestris*) and there are no allergic or hypotensive reactions.

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