Health Status Of 3 Years Old Female Javan Langur According To Aspinall Medical Check-Up Procedure In Javan Langur Center (JLC)

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Abstract. In Indonesia, JLC is a conservation foundation which a part of a Javan primate project managed by the Aspinal Foundation. Javan Langur which was kept in JLC must undergo medical check-up series to ensure animal health status and also to prevent transmission of diseases from an animal to other animals or humans. There were several steps of medical check-up in JLC according to Aspinal Foundation procedure that must be done mainly when the animal first arrives on conservation. Such us physical examination, morphometric measurement, hematology test, renal and liver function, hepatitis, simian immunodeficiency virus (SIV), Simian retrovirus (SRV) and Simian virus leukemia cell T (STLVs), feces examination for parasite and bacteria, tuberculin skin test by mammalian old tuberculin solution. All procedure was performed under anesthesia to avoid injury to both animal and veterinarian. One of the animal that when through this medical check-up was 3 years old female Javan Langur name Ifa. After a long and thorough examination, Ifa was on the normal condition and free from diseases as the lab result said so.

1. Introduction
Javan Lutung (Trachypithecus auratus E. Geoffrey 1812) is one of the endemic animals scattered on the islands of Java, Bali, and Lombok. Javan Lutung in Latin has several synonym names namely Trachypithecus kohlbruggei (Sody, 1931), Trachypithecus maurus (Horsfield, 1823). This primate is protected by Indonesian law based on Minister of Forestry and Plantation Decree No.733 / Kpts-II / 1999. In 2009 the conservation status of Javan Lutung according to IUCN red list of threatened species was established as Vulnerable and threatened registered in Appendix II which was nearly extinct by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (1, 2).

Javan Langur Center (JLC) is a rehabilitation center located in coban talun, Batu, East Java which a part of Javan primate project managed by Aspinal Foundation. Javan Langur's main activities in this rehabilitation center were treating, training behavioral and also habituation and forest classes (soft release) by placing the animal in habituation cage at a certain period (3). The habituation cage consists of 3 cages i.e. treatment, quarantine and socialization. However before they send the animal to the cage, it must be disease free before it grouped with the other Javan Langur. For this reason, a series of the medical examination process is conducted. Healthy animals will be sent to habituation cages for
intensive training and adaptation in the forest. While the sick animals will undergo the process of therapy and treatment at the treatment cage (4).

One of the animal that when through this medical check-up was 3 years old female Javan Langur name Ifa. Thereby the purpose of this study was to observe the result of Ifa’s health status by following all medical examination activities according to Aspinal procedures in order to consider the next step rehabilitation program for Ifa.

2. Materials and Methods

2.1 Research Animal
An animal that we observed was three years old female Javan langur named IFA was from Bandung.

![Figure 1. Langur Ifa was undergo physical examination and morphometric measurement](image)

2.2 Place and date
The medical check-up was held on 13 August 2018 in Javan Langur Center (JLC), Batu. Hematology test was performed at the Animal Hospital Education University of Brawijaya. Blood chemistry was performed at Patimura Laboratory Malang.

2.3 Tools
Tools that we use are clamp cage, syringes, alcohol, stethoscope, thermometer, measuring instrument, microtube, venoject EDTA, while for anesthesia using ketamine, medetomidin, atipamazole.

2.4 Anesthetic method
The previous day, langur Ifa was moved to an individual cage and fasted for 12 hours. The next morning the animals are moved to the clamp cage to get intramuscular injection using 5 mg / kg BW Ketamine HCL 10% and 50 μg / kg BB medetomidine. During the anesthetic, physiological status measurements include heart rate (HR), respiratory rate (RR) and temperature rate (TR) every 10 minutes. Anesthesia period approximately 30 minutes, later we injected atipamazole as an antidote.

2.5 Blood and serum sampling
The sampling process is carried out during the medical check-up process. Anesthetics are performed using a combination of ketamine and medetomidine by intramuscularly (IM). Blood is drawn using a 3 cc syringe through the femoral vein. Collected blood was insert into two venoject tubes, without anticoagulants for ELISA testing and with anticoagulants Ethylene diamine tetraacetic acid (EDTA) for hematological examination.

Blood on the venoject without anticoagulant is left coagulate before centrifugation for 15 minutes at the rate of 3000 revolutions per minute (rpm). The separated serum is stored in a cooler box and then taken to the Patimura laboratory Malang. While whole blood in the venoject containing...
EDTA is stored in a cooler box and then taken to the Animal Hospital of the Faculty of Veterinary Education, Universitas Brawijaya. After medical check-up and blood collection, Javan langur will be injected with atipamazole as a reversal agent.

2. Results and discussion

Series of medical check up start after anaesthetic procedure, body weighting, physical examination, morphometric, laboratory examination including complete hematology test, blood chemistry test, serological test, faecal examination, tuberculin test and finally microchip tagging. This medical examination is an important initial step to determine the next rehabilitation action so it is necessary to perform the procedure appropriately (4).

By the time this research conducted, Langur Ifa was in post quarantine rehabilitation program. So the medical procedure that performed in this general medical check up was only physical examination, morphometric, hematology test, blood chemistry test, tuberculin test and faecal examination. Viral disease test had ben done in February 2018 when ifa just arrived in JLC. From table 1 we could observe that ifa was in good condition despite there was abnormality in her leg. The previous general medical check up recorded ifa’s body weight was 3.9 kg in February 2018 and in August 2018 ifa’s body weight was 4 kg. Blood chemistry showed a healthy condition of renal and liver function. Faecal examination showed there was no helminth investation.

| Data          | Result                                |
|---------------|---------------------------------------|
| Name          | Langur Ifa                            |
| age           | 3 years 6 month                       |
| sex           | female                                |
| Hair color    | orange                                |
| Microchip     | 0006709EAD                            |
| Body weight   | 4 kg                                  |
| Temperature   | 37.1 c                                |
| External appearance | Fair body condition                  |
| Eyes          | normal                                |
| Oral cavity   | Pink mucose, no wound observed, upper PM1 and M3, lower PM1 and M3, missing right PM1 |
| Ears          | Both ears are slightly dirty, no parasite found |
| Arms including hand | No abnormality                      |
| Legs including feet | Left leg shorter than right leg      |
| Respiratory   | No abnormality, 52x perminute         |
| Cardiovascular| No abnormality                        |
| Gut sound/palpation | No abnormality                      |
| Lymph nodes   | No abnormality                        |
| Genitalia     | No abnormality, vagina sample was in estrus phase |
| Central nervous system | No abnormality                  |

In hematology test showed there were no abnormality result (table 2). Leucocyte total and differentiated leucocytes absolute (granulocyte, monocyte, and lymphocyte) were in normal value. Same result was also shown in eritocyte and hematocryte, however there was a slightly decrease on hemoglobin value that can indicate an iron deficiency. From the hematology test we can also figure out the physiological condition of langur ifa (table 2). Ratio of neutrophils per lymphocyte can determine stress level. According to Maheswari et al. (2013) the increase in the N / L ratio is caused by the release of cortisol which occurs when animals are under stress (5, 6). According to Kannan et
al. (2000), N / L ratio values that exceed 1.5 can indicate stress or stress (7). Meanwhile, according to the statement of Kim et al. (2005), the normal N/L ratio in long-tailed monkeys is 0.40-1.60. In this study ifa’s N/L ratio was 0.46 that mean Ifa was not in stress (8).

| Data            | Result  | unit   | Normal value |
|-----------------|---------|--------|--------------|
| White blood cell| 8.5     | 10^3/µL| 6,1-15,8     |
| Red blood cell  | 5.21    | 10^6/µL| 4,3-6,8      |
| Haemoglobinine  | 9.7     | g/dL   | 10.0-16      |
| Haematocrite    | 32.8    | %      | 31-48        |
| Thrombocyte     | 358     | 10^3/µL| 130-480      |
| Lymphocyte      | 4       | 10^3/µL| 1,9-7,6      |
| Monocyte        | 0.6     | 10^3/µL| 0,4-1,5      |
| Granulocyte     | 3.9     | 10^3/µL| 3,1-9,6      |

In this study we was also performed vaginal swap. Even though it was not a medical check up routine, but we got permission from the authorities. The result was langur Ifa was in oestrus phase (figure 2). Vaginal swabs appear to be dominated by superficial epithelial cells, and cornified epithelial cells are also seen. Accordimg to Nijman (2015) female Javan langur can started to reproduce in the age of 3-4 years and only giving birth one infant at a time .(9). So we might predicted that ifa was ready for be mating with the other male javan langur.

3. Conclusion
From this research, it can be concluded that female Javan Langur in this study was in a good health body condition, both physically and mentally as shown by the examination results. Henceforth this Javan langur can be paired with the others in a grouping cage.

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References

1. Wedana M, Kurniawan I, Arsan Z, Wawandono NB, Courage A, King TJWC. Reinforcing the isolated Javan langur population in the Coban Talun Protected Forest, East Java, Indonesia. 2013;1:31-9.

2. Partasasmita R, Malik ADJBFMdIPAUP. Studi Kebutuhan Pakan Lutung Jawa (Trachypithecus auratus E. Geoffroy Saint-Hilaire, 1812) betina pada Fase Akhir Rehabilitasi di Pusat Rehabilitasi Primata Jawa. 2016.

3. Kurniawan I. Profil Program Rehabilitasi Lutung Jawa (Trachypithecus auratus). Malang: JLC Press; 2012.

4. Titisari N, Fauzi A, Noviatri A, Vidiastuti D, Masnur I, Kurniawan IJHZ. WAAC-4 Series of Medical Examination as an Initial Phase of Rehabilitation Program in Lutung Jawa Conservation. 2018.

5. Titisari N, Asri K, Fauzi A, Masnur I, Kurniawan IJTTJoTAP. Kadar Hormon Kortisol dan Rasio Neutrofil/Limfosit (N/L) Satwa Lutung Jawa pada Saat di Kandang Perawatan dan Kandang Karantina di Hutan Coban Talun, Batu. 2019;20(1):29-37.

6. Maheshwari H, Esfandari A, Andriani M, Khovifah AJMP. Profiles of Cortisol, Triiodothyronine, Thyroxine and Neutrophil/Lymphocyte Ratio as Stress Indicators in Swamp Buffaloes 15 Days Post-Transportation. 2013;36(2):106.

7. Kannan G, Terrill T, Kouakou B, Gazal O, Gelaye S, Amoah E, et al. Transportation of goats: effects on physiological stress responses and live weight loss. 2000;78(6):1450-7.

8. Kim CY, Han JS, Suzuki T, Han SSJomp. Indirect indicator of transport stress in hematological values in newly acquired cynomolgus monkeys. 2005;34(4):188-92.

9. Nijman VJIZN. Newly described golden-crowned langurs Presbytis johnaspinalli are most likely partially bleached ebony langurs Trachypithecus auratus. 2015;62:403-6.