

# The Incidence of Parvovirus that Causes Feline Panleukopenia on Stray Cats (Felis catus) with the FPV Rapid Test Kit Ag in the East Surabaya Indonesia

*by* Jola Rahmahani

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## The Incidence of Parvovirus that Causes *Feline Panleukopenia* on Stray Cats (*Felis catus*) with the FPV Rapid Test Kit Ag in the East Surabaya Indonesia

Ilsa Mifa Nofira<sup>1</sup>, Dewa Ketut Meles<sup>2</sup>, Nusdianto Triakoso<sup>3</sup>,  
Martia Rani Tacharina<sup>4</sup>, Adiana Mutamsari Witaningrum<sup>4</sup>, Jola Rahmahani<sup>1\*</sup>

<sup>1</sup>Division of Veterinary Microbiology, <sup>2</sup>Division of Veterinary Basic Medicine, <sup>3</sup>Division of Veterinary Clinic, <sup>4</sup>Division of Veterinary Public Health, Faculty of Veterinary Medicine, Universitas Airlangga, Kampus C Unair Jalan Mulyorejo, Surabaya-60115 Indonesia

\*Corresponding author details: Jola Rahmahani; [jola\\_rahmahani@yahoo.co.id](mailto:jola_rahmahani@yahoo.co.id)

### ABSTRACT

Feline Panleukopenia (FP) is highly infectious disease for felidae kingdom but has not been found in human. FP is caused by feline panleukopenia virus (FPV) from the parvoviridae family. FPV has a very high mortality and morbidity rates. symptoms from this disease is a high fever, appetite loss, vomit which occur from the high fever, and hypersalivation. Most cases for FPV is happen on stray cat. The growing population of the stray cat can increase the risk of the FPV. The aim for this study is to find the potential of the feline panleukopenia virus spread on the stray cat from east Surabaya using the FPV rapid test kit ag and the swab sample from the cat anus. The results showed that there was one adult male cat with an incidence percentage of 0.03% which detected the presence of FPV antigen.

**Keywords:** Feline panleukopenia Virus (FPV); stray cats; rapid test kit FPV Ag

### INTRODUCTION

Feline panleukopenia (FP) is a highly contagious infectious disease in the felidae family and has not been found in humans<sup>1</sup>. FP is caused by Feline panleukopenia virus (FPV) of the parvoviridae family. FPV have a very high mortality and morbidity rate<sup>2</sup>. Symptoms that FPV can cause is high fever, decreased appetite, vomiting usually occurs after high fever and sometimes hypersalivation<sup>3</sup>. FPV also has subclinical symptoms that means that the cat does not show a certain symptom or a mild form of medical condition<sup>4</sup>. This subclinical case, occurs a lot in adult cats<sup>5</sup>. This can happen because the cat has been infected with FPV and then recovered or have been vaccinated, which makes the cat stronger against attacks from FPV. However, this does not rule out the possibility of a cat with Subclinical symptoms to transmit this disease to other cats<sup>6</sup>. On subclinical stage, prevention efforts are needed so that there is no secondary infection that makes the cat infected with FPV condition worse<sup>7</sup>.

FPV cases are more frequent in stray cats, Islamet al<sup>8</sup> said that the prevalence of FPV in stray cats (41.67%) is higher compared to a house cat (17.39%). This can happen because stray cats did not get animal welfare, such as a place to live<sup>9</sup>. deworming vitamin, food and also vaccine. In addition, stray cats have wider roaming range compared to a pet cat according to Meek<sup>11</sup> stray cats roaming area is up to 5.1 Ha while house cat only 2.9 Ha, this wider roam territory can also be one of the factors that causes more stray cats is at risk of developing FPV.

Population of stray cat keep increasing because cat is an animal that is seasonally polyestrous<sup>12</sup> it means cat have seasonal estrous and are able to conceive several times a year with each birth has approximately 3 kittens. The increase of stray cat population will pose more risk to FPV.

It is needed to perform FPV detection on stray cats in East Surabaya in order to determine the potential for FPV cases on stray cats and can prevent FPV.

### METHODS

The sample in this study is stray cat anal swab that was in East Surabaya area. A total of 30 stray cats anal swab samples from 3 markets in East Surabaya including the Sopocono market, Rungkut sub-district, Pucang market, Gubeng sub-district, and Semolowaru market, Sukolilo sub-district that has a high stray cat population, 10 samples were taken from each market. Sampling method in this research is accidental sampling. The material used is stray cat's anal swab found by the researchers in field. The liquid diluent contains approximately 3 ml in the Rapid Test FPV kits ag package. Cat food to make the cat approaches without any coercion which can make cats tormented. The tools used are glove, paper or newspaper, masks and Rapid FPV Test Kits ag. Rapid Test Kit FPV ag is a tool to test the presence of FPV antigen on the feces from stray cat's anal swab found by the researchers.

The cats were caught and approached using cat food, the cat was positioned comfortably then sampling can be conducted. Samples were taken from the cat anal using cotton bud, then entered into the collection tube which contains approx. 3 ml of diluent, then stirred slowly. The supernatant was taken using a pipette from the Rapid Test FPV kits ag package then add about 3-4 drops into the round hole in the rapid test kit FPV ag. Rapid Test Kit FPV ag was positioned in a flat and dry surface. The interpretation of the results will appear in approximately 5-10 minutes. Negative result is shown if there is only 1 line on the letter C which means control. Positive result is shown if there are 2 lines on the letter C and T which means test. If there is no line on the letter C, the result is invalid<sup>8</sup>, and it needs to be repeated using the same sample<sup>13</sup>.

After taking a sample, a section of fur on the back near the tail or sacrum of the cat was cut to differentiate the cats.

## RESULTS AND DISCUSSION

**TABLE 1:** Results of Parvovirus Incidence in stray Cats at Sopoyno Market, Rungkut District

Cat Group	Amount	Negative Results	Positive Results
Male Kitten	4	4	0
Adult Male	1	1	0
Female Kitten	1	1	0
Adult Female	4	4	0
<b>Amount</b>	<b>10</b>	<b>10</b>	<b>0</b>

**TABLE 2:** Results of Parvovirus Incidence in stray Cats at Pucang Market, Gubeng District.

Cat Group	Amount	Negative Results	Positive Results
Male Kitten	1	1	0
Adult Male	3	3	0
Female Kitten	2	2	0
Adult Female	4	4	0
<b>Amount</b>	<b>10</b>	<b>10</b>	<b>0</b>

**TABLE 3:** Results of Parvovirus Incidence in stray Cats at Semolowaru Market, Sukolilo District.

Cat Group	Amount	Negative Results	Positive Results
Male Kitten	1	1	0
Adult Male	3	2	1
Female Kitten	2	2	0
Adult Female	4	4	0
<b>Amount</b>	<b>10</b>	<b>9</b>	<b>1</b>

In the descriptive table above, it can be seen that there are 30 stray cat's anal swab samples and showed 29 negative samples and there was one positive number from the Semolowaru, Sukolilo District. From these results, it appears that two lines are formed on the C line and the T line.



**FIGURE 1:** Positive Result



**FIGURE 2:** Negative Result

From the results of these data, it can be seen the percentage of parvovirus events that causes Feline panleukopenia on stray cats in the East Surabaya Region is 0.03%. This percentage was based on the formula:

$$\begin{aligned} \text{Event percentage} &= (\Sigma \text{ positive samples}) / (\Sigma \text{ all samples}) \times 100\% \\ &= 1/30 \times 100\% \\ &= 0,03\% \end{aligned}$$

## RESULTS AND DISCUSSION

The results of the research on the incidence of parvovirus that causes FP in stray cats seems to show positive results in adult male cats. In the research of Bukar-kolo et al<sup>14</sup> the prevalence of FPV positive male cats 7% and 6.5% female cat. FPV incident in male cats is higher probably due to the wider roaming area than the female cat which made the males are more at risk of getting infected with FPV. According to Hansen<sup>15</sup> male cats has a 2 times wider home range than female cats. Beside the gender, there is the location factor. The market is damp and also dirty which is the source of disease infection<sup>16</sup> with no exception of FPV in stray cats that lives on the market.

In the research results, there are 2 lines on the Rapid Test Kit FPV ag with a line at the C mark, which means Control and T which means Test. This shows there are positive results but the T line looks faint and not as clear as on line C. The adult male cat showed clinical symptoms that leads the cat to be infected with FPV. The cat has a fever but no diarrhea which according to Squires<sup>3</sup> diarrhea occurs after one to two days of FPV infection, it is possible that the antibody titer to FPV is still low or under cut off<sup>17</sup> which causes faint lines to form. Detection limit of the Rapid Test Kit FPV ag is approximately  $10^{4.5} \text{TCID}_{50}/0.1 \text{ ml}^{18}$ .

The percentage of results shows 0.03% which is a very small number. The possibility of this happening is because of the climate when the study was conducted. Hafid<sup>19</sup> said that FPV infection is higher during the rainy season. According to BMKG<sup>20</sup> in March on East Surabaya is the end of the rainy season and categorized as normal. Another possibility is the low survival rate because FPV is a disease with high mortality rate to 100%<sup>21</sup>. Untreated adult cat mortality rate reaches 85% and mortality in untreated kitten reaches 100%<sup>22</sup>. FPV-infected cats are most likely died before sampled.

The results of this study are different with research conducted by Mahendra<sup>23</sup>. Compared to the previous research, which the data was collected from medical records at the veterinary clinic and a veterinary hospital. It is possible that cats infected with FPV are housecats which their health, environmental conditions and temperature are always monitored. This research method is only done at one time and using stray cats that the health, condition and temperature is unknown. So, when doing this research, it is very difficult to find a stray cat that is infected with FPV, with high mortality and without treatment and therapy.

The main prevention that can be done is vaccination of cats, even if the vaccination cannot completely guarantee the cat won't be infected but at least the cat will be stronger against FPV infection<sup>24</sup>. The first vaccination can be done from the age of 8-9 weeks<sup>25</sup>.

## CONCLUSION

Based on research results regarding the incidence of parvovirus in stray cats in some market at East Surabaya using Rapid Test Kit FPV ag in March to April 2022, it can be concluded that there is one adult male cat with percentage 0.03% incidence detected FP virus.

## REFERENCES

- [1] Sykes, J.E. Canine and Feline Infectious Diseases (Chapter 19). 2014; ISBN: 978-1-4377-0795-3.
- [2] Mosalanezhad, B., Avizeh, R., and Ghorbanpour, N. M. Antigenic detection of Feline Panleukopenia virus (FPV) in diarrhoeic companion cats in Ahvaz area. 2009.
- [3] Squires, R.A. Feline Panleukopenia (Feline Infectious Enteritis, Feline Parvoviral Enteritis). Msd Manual Veterinary Manual. 2020.
- [4] KBBI. Kamus Besar Bahasa Indonesia (KBBI). [Online] Available at: <http://kbbi.web.id/pusat>. 2022.
- [5] McCune, Sandra. The Domestic Cat. 2010; ISBN: 978-1-405-17523-4.
- [6] Irwan. Epidemiologi Penyakit Menular. Bantul. CV Absolute Media Krapyak. 2017.
- [7] Najmah. Epidemiologi Penyakit Menular. Ogan lilir. Universitas Sriwijaya. 2015.
- [8] Islam, M.A., Rahman M.S., Uddin M.J., Rahman A.K.M.A. Antigenic Detection Of Feline Panleukopenia Virus In Local Breed Cats At Tangail District In Bangladesh. Bangladesh. *Int. J. Biores.* 2010; 2 (11): 25-28.
- [9] National Animal Welfare Advisory Committee (NAWAC). . Animal welfare (companion cats). 2007.
- [10] NAWAC. Code of Welfare: Companion Cats. New Zealand. New Zealand Ministry of Agriculture and Forestry. 2018.
- [11] Meek PD. Home range of house cats *Felis catus* living within a National Park. *Aust. Mammal.* 2003;25: 51-60. doi:10.1071/AM03051
- [12] Little, S.E.. Female Reproduction (Chapter 40). 2012; PMID: PMC7158189.
- [13] Mutaqinah, H.R.A. Deteksi Corona Virus Yang Menyebabkan Feline Infectious Peritonitis Pada Kucing Di Beberapa Cattery Dan Breeder Daerah Surabaya Selatan [Thesis]. Fakultas Kedokteran Hewan Universitas Airlangga. 2019.
- [14] Bukar-kolo, Y.M., Buba E., Igbokwe I.O., and Egwu O. Prevalence of Feline Panleukopenia Virus in Pet and Stray Cats and Associated Risk Factors in Maiduguri, Nigeria. Nigeria. *AJVS.* 2018; Vol. 59 (1): 92-96. doi: 10.5455/ajvs.282457
- [15] Hansen, C.M. Movements and Predation Activity of Feral and Domestic Cats (*Felis catus*) on Banks Peninsula. [Thesis]. Lincoln University. 2010.
- [16] Sucitrayani, P. T. E., Oka, I. B. M., dan Dwinata, M. Prevalensi Infeksi Protozoa Saluran Pencernaan pada Kucing Lokal (*Felis catus*) di Denpasar. *Buletin Veteriner Udayana*, 2014;6(2), 153-159.
- [17] Fristiani, A.K.B., Santosa B., dan Ariyadi T. Sensitivitas dan Spesifitas HBsAG metode Rapid TEST terhadap ELISA. Semarang [Thesis]. Universitas Muhammadiyah. 2017.
- [18] Bionote. Anigen Rapid FPV Ag Test Kit. Korea. 2008; Doc.No: I1203-0E
- [19] Hafid, M.K.A. Penyakit Viral Pada Kucing Yang Didagnosis Di Rumah Sakit Hewan (Rsh) Prof. Soeparwi Tahun 2017-2019. [Thesis]. Yogyakarta. Universitas Gajah Mada. 2020.
- [20] BMKG. Badan Meteorologi Klimatologi Dan Geofisika. [Online] Available at <https://www.bmkg.go.id>. 2022.
- [21] Kruse, B.D., Unterer S., Horlacher K., Louis S.C., Hartmann K. Prognostic Factors In Cats With Feline Panleukopenia. *J Vet Intern Med* 2010 ;24: 1271-1276. doi: 10.1111/j.1939-1676.2010.0604.x
- [22] Awad, R.A., Hassan S.A, and Martens Brit. Treatment of Feline panleukopenia Virus Infection in Naturally Infected Cats and its Assessment. *Giza. J. Biol. Sci.* 2019;19 (2): 155-160. doi: 10.3923/jbs.2019.155.160
- [23] Mahendra, Y.N., Yuliani.M.G.A., Widodo Agus., Diyantoro., Sofyan.S.M. A Case Study Of Feline Panleukopenia In Cats At The Educational Animal Hospital Of Universitas Airlangga. Surabaya. *J. Vet. Sci. Technol.* 2020;1: 6-10. doi: 10.20473/javest.V1.11.2020.6-10
- [24] Zenad, M.M and Radhy A.M. Clinical, serological and antigenic study of feline panleukopenia virus in cats in Baghdad, Iraq. Baghdad. *Iraqi J. Vet. Sci.*, 2020; Vol. 34, No. 2. doi: 10.33899/ijvs.2019.125960.1201
- [25] Gardiner, Andrew. A-Z of Cat Health and First Aid A practical guide for owners Revised and updated. Edinburgh Souvenir Press. 2015; 365-369.

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