

Deteksi dan Karakterisasi *Feline coronavirus* Berdasarkan Gen N dan 5' UTR dengan *Reverse Transcriptase Quantitative Polymerase Chain Reaction* (RT-qPCR) pada Kasus Klinis

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INTISARI

Feline coronavirus (FCoV) berasal dari genus *Alphacoronavirus*, famili Coronaviridae, ordo Nidovirales. Agen FCoV dibagi menjadi dua biotipe yang dibedakan berdasarkan karakter biologisnya yaitu biotipe avirulen yang disebabkan oleh *Feline Enteric Coronavirus* (FECV) yang menginfeksi enterosit, menyebabkan infeksi ringan dan umumnya dapat sembuh sendiri. Biotipe virulen yang disebabkan oleh *Feline Infectious Peritonitis Virus* (FIPV) yang menginfeksi monosit dan sel makrofag sehingga memungkinkan terjadinya penyebaran sistemik. Penyakit FIP cenderung bersifat fatal dengan morbiditas dan mortalitas yang tinggi pada kucing. Diagnosis antemortem kasus FIP sangat diperlukan, mengingat gejala klinis tidak patognomonik serta rendahnya sensitivitas dan spesifisitas uji diagnostik yang rutin dilakukan. Penelitian ini bertujuan untuk mendeteksi FCoV berdasarkan gen N dan 5'UTR dengan metode *Reverse Transcriptase Quantitative Polymerase Chain Reaction* (RT-qPCR) dan karakterisasi isolat lokal berdasarkan gen N. Deteksi FCoV dilakukan pada 45 sampel yang terdiri dari 14 sampel asites dan 31 sampel darah kucing yang terdiagnosis terinfeksi FCoV secara klinis dari beberapa Klinik Hewan di Yogyakarta. Berdasarkan hasil pemeriksaan RT-qPCR, sebanyak 62,22% (28/45) sampel terdeteksi positif FCoV yang terdiri dari 100% (14/14) positif pada sampel asites dan 45,16% (14/31) positif pada sampel darah. Hasil positif terdeteksi pada nomor sampel yang sama berdasarkan deteksi gen N dan 5'UTR. Gejala klinis yang teramati pada sampel positif yaitu adanya efusi abdominal sebanyak 50% (14/28), ataksia sebanyak 21,42% (6/28), uveitis sebanyak 32,14% (9/28), dan rinitis sebanyak 17,85% (5/28). Hasil sekuensing gen N yang dianalisis menunjukkan kekerabatan yang dekat antar isolat lokal FCoV asal Yogyakarta dan isolat tersebut memiliki kekerabatan yang dekat dengan isolat FCoV asal Italia (GU017104.1).

Kata kunci: *Feline coronavirus*, Feline infectious peritonitis, Kucing, RT-qPCR

Detection and Characterization of *Feline coronavirus* Based on N Gene and 5'UTR by Reverse Transcriptase Polymerase Chain Reaction (RT-qPCR) in Clinical Cases

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ABSTRACT

Feline coronavirus (FCoV) belongs to the genus Alphacoronavirus, family Coronaviridae, order Nidovirales. The etiologic agent FCoV occurs in two distinct biotypes that can be distinguished by their biological behavior, avirulent biotype caused by *Feline Enteric Coronavirus* (FECV) which infects enterocytes, causes mild infection and generally self-limited. The virulent biotype caused by *Feline Infectious Peritonitis Virus* (FIPV) which infects monocytes and macrophage cells, possibility of systemic spread. FIP tends to be fatal with high morbidity and mortality in cats. Antemortem diagnosis of FIP cases is urgently needed, considering the clinical signs are not pathognomonic and the low sensitivity and specificity of routine diagnostic tests. This study aimed to detect FCoV based on the N gene and 5'UTR using the Reverse Transcriptase Quantitative Polymerase Chain Reaction (RT-qPCR) method and to characterize local isolates based on the N gene. FCoV detection was carried out on 45 samples consisting of 14 ascites samples and 31 blood samples of cats diagnosed clinically infected with FCoV from several Veterinary Clinics in Yogyakarta. Based on the results of the RT-qPCR examination, 62.22% (28/45) of the samples were detected positive for FCoV consisting of 100% (14/14) positive for ascites samples and 45.16% (14/31) positive for blood samples. Positive results were detected in the same samples based on the detection of the N gene and 5'UTR. Clinical symptoms observed in positive samples were abdominal effusion in 50% (14/28), ataxia in 21,42% (6/28), uveitis in 32,14% (9/28), and rhinitis in 17,85% (5/28). The results of the N gene sequencing analyzed showed close kinship between the local FCoV isolates from Yogyakarta, and these isolates had a close kinship with the FCoV isolate from Italy (GU017104.1)

Keywords: *Feline coronavirus*, Feline infectious peritonitis, Cat, RT-qPCR