DIAGNOSA DAN KARAKTERISASI MOLEKULER GEN *groEL* *Anaplasma spp.* PADA PASIEN ANJING DI YOGYAKARTA

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INTISARI

Anaplasmosis merupakan salah satu penyakit *Companion Vector-Borne Disease* (CVBD) yang ditularkan oleh caplak dan dapat menyebabkan masalah serius pada anjing. Gejala klinis anaplasmosis pada anjing tidak spesifik, sehingga membutuhkan peneguhan diagnosa sampai dengan tingkat molekuler. Penelitian ini bertujuan untuk mendiagnosa anaplasmosis secara klinis, hematologi, mikroskopis dan molekuler berdasarkan gen *groEL* menggunakan metode *Polymerase Chain Reaction* (PCR) serta mengetahui keragaman genetik *Anaplasma spp.* pada pasien anjing di Yogyakarta. Sampel penelitian adalah darah anjing terduga anaplasmosis di Rumah Sakit Hewan (RSH), beberapa Klinik Hewan dan *Pet Shop* di area Yogyakarta berdasarkan anamnesa, riwayat infestasi caplak dan pemeriksaan gejala klinis. Penelitian dilakukan mulai dari ekstraksi DNA, amplifikasi DNA berdasarkan target gen *groEL* metode PCR, sekuensing, analisis dan konstruksi pohon filogenetik menggunakan *Basic Local Aligment Search Tool* (BLAST) dan *software Molecular Evolutionary Genetics Analysis* (MEGA) versi 7.0. Sampel positif berdasarkan deteksi PCR ditemukan sebanyak 6 dari 51 pasien anjing yang diperiksa. Pasien anjing positif anaplasmosis memiliki gejala klinis yaitu adanya infestasi caplak sebanyak 83.3% (5/6), gangguan gastrointestinal 83.3% (5/6), demam 50% (3/6), mukosa pucat 50% (3/6), anoreksia 33.3% (2/6), *lethargi,* acites, rambut kusam dan kepincangan sebanyak 16.67% (1/6). Hasil pemeriksaan hematologi menunjukkan perubahan komponen dalam darah yaitu trombositopenia sebanyak 100% (6/6), anemia 83.3% (5/6), eosinopenia 83.3% (5/6), penurunan nilai PCV 83.3% (5/6), limfopenia 50% (3/6), neutropenia 33.3% (2/6), neutrofilia 50% (3/6), leukositosis 33.3% (2/6), limfositosis 33.3% (2/6), penurunan nilai MCV dan MCH 33.3% (2/6), leukopenia, monositopenia, eosinofilia, monositosis, dan penurunan nilai MCHC sebanyak 16.67% (1/6). Hasil pemeriksaan mikrosokopis apus darah tidak ditemukan keberadaan *morulae.* Sekuen sampel penelitian KHJ/C2, KHJ/A2, KSK/L, KHJ/L dan KNP/M2 memiliki kekerabatan yang dekat dengan *Anaplasma platys* (AF478129.1) dari *Democratic Republic of Congo* (DRC), Afrika dan *Anaplasma platys* (KY581623.1) dari Taiwan. Analisis filogenetik menunjukkan nilai homologi yang sangat tinggi (100%) dengan nilai *bootstrap* konstruksi pohon filogenetik sebesar 100%.

Kata Kunci: anaplasmosis, klinis, hematologi, mikroskopis, molekuler gen *groEL*

DIAGNOSIS AND MOLECULAR CHARACTERIZATION groEL GENE OF *Anaplasma spp*. IN DOGS AT YOGYAKARTA

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ABSTRACT

Anaplasmosis is a Companion Vector-Borne Disease (CVBD) which is transmitted by ticks and can cause serious problems in dogs. Clinical symptoms of anaplasmosis in dogs are not specific, so that requires confirmation of diagnosis to the molecular level. This study aims to diagnose anaplasmosis clinically, hematologically, microscopically and molecularly based on the groEL gene using the Polymerase Chain Reaction (PCR) method and to determine the genetic diversity of *Anaplasma spp.* in dog patients in Yogyakarta. The research sample was suspected dog blood anaplasmosis at the Animal Hospital (RSH), several Animal Clinics and Pet Shops in the Yogyakarta area based on history, history of tick infestations and clinical symptoms examination. The research was carried out from DNA extraction, DNA amplification based on groEL gene target PCR method, sequencing, phylogenetic tree analysis and construction using the Basic Local Aligment Search Tool (BLAST) and Molecular Evolutionary Genetics Analysis (MEGA) software version 7.0. Positive samples based on PCR detection found that 6 of 51 dog patients were examined. Positive dog patients with anaplasmosis have clinical symptoms, which are 83.3% (5/6) tick infestation, 83.3% (5/6) gastrointestinal disorders, 50% (3/6) fever, 50% (3/6) pale mucosa, 33.3% (2/6) anorexia, 16.67% (1/6) lethargi, acites, dull hair and lameness. Hematological examination results showed changes in blood components, 100% (6/6) thrombocytopenia, 83.3% (5/6) anemia, 83.3% (5/6) eosinopenia, 83.3% (5/6) decreased PCV value, 50% (3/6) lymphopenia, 33.3% (2/6) neutropenia, 50% (3/6) neutrophilia, 33.3% (2/6) leukocytosis, 33.3% (2/6) lymphocytosis, 33.3% (2/6) decreased MCV and MCH values, 16.67% (1/6) leukopenia, monocytopenia, eosinophilia, monocytosis and decreased MCHC values. The results of examination of blood smear microsocopy were not found in the presence of morulae. Sequences of study samples KHJ/C2, KHJ/A2, KSK/L, KHJ/L and KNP/M2 have close kinship with *Anaplasma platys* (AF478129.1) from *Democratic Republic of Congo* (DRC), Afrika and *Anaplasma platys* (KY581623.1) from Taiwan. Phylogenetic analysis shows a very high homology value (100%) with 100% a bootstrap value of phylogenetic tree construction.

Keywords: Anaplasmosis, clinical, hematological, microscopic, molecular of groEL gene