

# Analysis of sensitivity and specificity of SD Bioline Dengue duo NS1 antigen and IgM & IgG antibody diagnostic on DENV-2 infected patients in Jakarta, Indonesia = Analisis sensitivitas dan spesifisitas SD Bioline Dengue Duo NS1 antigen dan IgM & IgG antibodi sebagai Kit diagnosis pada pasien yang terinfeksi DENV-2 di Jakarta, Indonesia

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## Abstrak

[Infeksi dengue masih merupakan masalah kesehatan di dunia termasuk Indonesia. Deteksi dini berperan penting sebagai dasar penatalaksanaan awal infeksi dengue. Antigen NS1 pada virus dengue telah terbukti sebagai marka untuk diagnosis dini. Penelitian ini menganalisis lebih lanjut mengenai sensitivitas dan spesifisitas kit SD Bioline Dengue Duo terhadap keberadaan protein Non- Structural (NS1) pada pasien yang terinfeksi virus dengue serotipe 2 (DENV-2). Kinetik NS1 dan keberadaan imunoglobulin M (IgM) pada serum pasien pun dievaluasi dari hari pertama demam sampai hari ketujuh. Penelitian ini merupakan penelitian berbasis komunitas di Jakarta yang dimulai sejak Januari 2010 sampai Mei 2013. Kami menggunakan sampel serum dari pasien dengan gejala klinis infeksi dengue. Reverse Transcription – Polymerase Chain Reaction (RT-PCR) dan/atau isolasi virus dan/atau kenaikan titer imunoglobulin G (IgG) antidengue digunakan sebagai baku emas. Sensitivitas, spesifisitas, nilai prediksi negatif dan positif ditampilkan dalam tabel 2x2 dan area dibawah kurva dari Receiver Operating Curve. Dari 105 pasien, 23 diantaranya positif terinfeksi DENV-2, sementara 34 orang teruji negatif infeksi virus dengue (DENV). Sensitivitas dan spesifisitas SD Bioline Dengue Duo terhadap DENV-2 bernilai 78.3% dan 100% (CI 95%, 73.5% sampai 94.2%). Hasil kinetik NS1 menunjukkan pola penurunan, yang dimulai pada hari kelima. Namun, keberadaan IgM mengalami pola kenaikan secara bertahap. Dapat disimpulkan bahwa kit ini memiliki sensitivitas dan spesifisitas tinggi terhadap DENV-2 sehingga, Dengue infection is still become the major health problem in the world, including

Indonesia. Early detection plays important role in developing early basic management. NS1 antigen in dengue virus is proven to be an early marker for early diagnosis and this research to analyzed the sensitivity and specificity of SD Bioline Dengue Duo based on the presence of Non-Structural protein 1 (NS1) on dengue serotype-2 virus (DENV-2) infected patients. Kinetics of NS1 and the presence of immunoglobulin M (IgM) antibody were also evaluated from the 1st day to 7th day. This research was a community-based study in Jakarta started from January 2010 until May 2013. We used serum samples from patients with clinical manifestation of dengue infection. Furthermore, Reverse Transcription – Polymerase Chain Reaction (RT-PCR) and/or virus isolation and/or augmentation

of immunoglobulin G (IgG) antidengue titer were used as a gold standard. Sensitivity, specificity, negative and positive predictive value of diagnostic kit will be presented in 2x2 tables and area under the curve of the Receiver Operating Curve. From the total of 105 patients, 23 patients were confirmed positive for DENV-2 infection, while 34 patients were confirmed negative DENV infection. Sensitivity and specificity of SD Bioline Dengue Duo towards DENV-2 accounted for 78.3% and 100% (CI 95%, 73.5% to 94.2%), respectively. Kinetic of NS1 depicted downward trend starting on the 5th day. Nevertheless, IgM presence showed gradual increase trend. This indicates that this kit has high sensitivity and specificity for DENV-2, therefore it can be used as a diagnostic kit for dengue infection in Jakarta, Indonesia.]