

## INTISARI

### KORELASI ZETA POTENSIAL ERITROSIT (FOTO SPEKTRUM DARAH EDTA) TERHADAP LED DAN AKTIVITAS PENYAKIT (Mex-SLEDAI) PADA PASIEN LUPUS ERITEMATOSUS SISTEMIK DI RSUP DR. SARDJITO

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**Latar Belakang.** Lupus eritematosus sistemik (LES) merupakan penyakit inflamasi autoimun kronis dengan gambaran klinis dan perjalanan penyakit yang beragam. Penilaian aktivitas penyakit LES dapat dilakukan menggunakan *Mexican Systemic Lupus Erythematosus Disease Activity Index* (Mex-SLEDAI). Selain itu, laju endap darah (LED) juga digunakan untuk menilai aktivitas penyakit LES. Pada kondisi autoimun, protein-protein di sekitar eritrosit berubah dari muatan negatif menjadi muatan positif. Kemampuan dari eritrosit untuk mempertahankan kestabilan elektrik pada permukaan membrannya disebut dengan zeta potensial eritrosit.

**Tujuan:** Menilai korelasi Zeta Potensial Eritrosit (Foto Spektrum Darah EDTA) terhadap LED dan aktivitas penyakit (Mex SLEDAI) pada pasien Lupus Eritematosus Sistemik (LES).

**Metode:** Penelitian ini menggunakan metode analitik observasional potong lintang. Populasi target adalah seluruh pasien LES di RSUP Dr. Sardjito Yogyakarta. Zeta potensial eritrosit dan LED diukur dengan pemeriksaan lab. Aktivitas penyakit LES diukur menggunakan Mex-SLEDAI. Nilai *cut-off* Zeta potensial eritrosit dan LED dicari menggunakan kurva ROC, kemudian hubungan antara zeta potensial eritrosit dan LED dengan Mex-SLEDAI dianalisis menggunakan uji korelasi *Spearman*.

**Hasil:** Dari total sampel 62 orang, 59 berjenis kelamin perempuan (95,2%) dan 3 berjenis kelamin laki-laki (4,8%). Nilai *cut-off* LED sebesar 85,5 (AUC=0,865; sensitivitas=100,00%; spesifisitas=69,10%) dan nilai *cut-off* Zeta potensial sebesar 1,55 (AUC=0,806; sensitivitas=100,00%; spesifisitas=61,80%). Terdapat korelasi positif kuat antara zeta potensial eritrosit dengan Mex-SLEDAI ( $\rho = 0,645$ ; 95% CI=0,6-0,799), korelasi positif sedang antara LED dengan Mex-SLEDAI ( $\rho = 0,494$ ; 95% CI=0,40-0,599), dan korelasi positif sedang antara Zeta potensial eritrosit dengan LED ( $\rho = 0,491$ ; 95% CI=0,40-0,599). Analisis multivariat menunjukkan bahwa Zeta potensial eritrosit dan LED berpengaruh signifikan terhadap Mex-SLEDAI (B=1,725; 95% CI=0,509-2,941; p=0,006 dan B=0,032; 95% CI=0,004-0,060; p=0,027 secara berurutan).

**Kesimpulan:** Zeta potensial eritrosit berkorelasi terhadap LED dan Mex SLEDAI pada pasien LES.

**Kata Kunci:** LES, zeta potensial eritrosit, LED, Mex-SLEDAI.

## ABSTRACT

### CORRELLATION BETWEEN ERYTHROCYTE ZETA POTENTIAL (EDTA BLOOD SPECTROPHOTOMETRY), ERYTHROCYTE SEDIMENTATION RATE AND DISEASE ACTIVITY (Mex-SLEDAI) ON SYSTEMIC LUPUS ERYTHEMATOSUS PATIENTS IN DR. SARDJITO PUBLIC HOSPITAL

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**Background:** Systemic lupus erythematosus (SLE) is a chronic autoimmune inflammatory disease with diverse clinical manifestations and disease activity. SLE disease activity is scored using *Mexican Systemic Lupus Erythematosus Disease Activity Index* (Mex-SLEDAI). Besides, erythrocyte sedimentation rate (ESR) is also used evaluate disease activity. In autoimmune circumstances, erythrocyte-surrounding protein shifts from negatively to positively charged. The ability of erythrocyte to maintain its surface membrane's electrical stability is known as erythrocyte's zeta potential.

**Objective:** To evaluate the correlation between erythrocyte's zeta potential (EDTA blood spectrophotometry), ESR and disease activity (Mex-SLEDAI) in SLE patients.

**Method:** This in an observational analytic cross-sectional study with target population including all SLE patients in Dr. Sardjito Public Hospital, Yogyakarta. Erythrocyte's zeta potential and ESR were measured by laboratory examination. SLE disease activity was scored using Mex-SLEDAI. Cut-off values of erythrocyte's zeta potential and ESR was established using ROC curves, and correlation between erythrocyte's zeta potential, ESR and Mex-SLEDAI was tested using Spearman test.

**Result:** Of total 62 samples, 59 (95,2%) were female and 3 (4,8%) were male. Cut-off value for ESR was 85,5 (AUC=0,865; sensitivity=100,00%; specificity=69,10%) dan cut-off value for erythrocyte's zeta potential was 1,55 (AUC=0,806; sensitivity=100.00%; specificity=61.80%). There was a strong positive correlation between erythrocyte's zeta potential and Mex-SLEDAI score ( $\rho = 0.645$ ; 95% CI=0,6-0,799), moderate positive correlation between ESR and Mex-SLEDAI score ( $\rho = 0,494$ ; 95% CI=0,40-0,599), and moderate positive correlation between erythrocyte's zeta potential and ESR ( $\rho = 0,491$ ; 95% CI=0,40-0,599). Multivariate analysis showed that erythrocyte's zeta potential and ESR significantly affect Mex-SLEDAI scores (B=1,725; 95% CI=0.509-2.941;  $p=0,006$  and B=0.032; 95% CI=0,004-0,060;  $p=0,027$ , consecutively).

**Conclusion:** There were correlations between erythrocyte's zeta potential, ESR and Mex-SLEDAI scores in SLE patients.

**Key Word:** ESR, erythrocyte's zeta potential, Mex-SLEDAI.