

**PERBEDAAN EKSPRESI MAKROFAG M1 DAN M2  
PADA SERPIHAN DARAH MENSTRUASI  
WANITA ENDOMETRIOSIS DAN NON ENDOMETRIOSIS**

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**ABSTRAK**

**Latar Belakang:** Endometriosis merupakan penyakit yang sulit dideteksi oleh masyarakat umum dan dokter. Diagnosis endometriosis adalah hambatan utama dalam manajemen klinis penyakit ini. Patogenesis endometriosis melibatkan banyak faktor termasuk sistem imun. Telah dilaporkan terjadi peningkatan ekspresi makrofag di endometrium ektopik dan eutopik wanita endometriosis. Hingga saat ini belum ada yang penelitian tentang ekspresi makrofag pada darah menstruasi wanita endometriosis. Penelitian pada serpihan darah menstruasi ini diharapkan dapat membantu dalam menjelaskan proses pathogenesis dan pencarian biomarker sebagai penunjang diagnosis dan monitoring penyakit endometriosis. **Tujuan:** Mengukur dan membuktikan perbedaan ekspresikan makrofag, makrofag M1, makrofag M2, rasio M1/M2 pada serpihan darah menstruasi wanita endometriosis dan non endometriosis. **Metode:** Penelitian analitik observasional *cross sectional* yang dilakukan pada 30 subyek penelitian endometriosis dan non endometriosis. Dilakukan pewarnaan imunohistokimia pada sampel serpihan darah menstruasi dari subyek penelitian yang diambil pada hari kedua atau ketiga dengan antibodi CD68 dan CD163 untuk mengukur ekspresi panmakrofag dan makrofag M2. Ekspresi makrofag M1 merupakan pendekatan dari pengurangan ekspresi panmakrofag M dengan makrofag M2. **Hasil:** Data ekspresi M1, M2 dan rasio M1/M2 pada kedua kelompok penelitian memiliki distribusi normal kemudian dilanjutkan dengan uji *independent t-test* dengan *onetailed* 0,05. Probabilitas dianggap bermakna secara statistik bila nilai  $p < 0,05$  dengan selang kepercayaan 95%. Berdasarkan hasil uji statistik didapatkan ekspresi makrofag M , pada kelompok endometriosis dan kontrol sebesar  $3,62 \pm 0,50$  dan  $2,80 \pm 0,64$  dengan hasil uji beda non parametrik didapatkan  $p=0,0005$ . Rerata ekspresi makrofag M1 pada kelompok endometriosis dan non endometriosis masing-masing  $1,40 \pm 0,35$  dan  $1,33 \pm 0,40$  ( $p=0,3005$ ). Rerata ekspresi M2, pada kelompok endometriosis dan non endometriosis sebesar  $2,23 \pm 0,41$  dan  $1,47 \pm 0,36$  ( $p=0,0005$ ). Sedangkan rasio M1/M2, pada kelompok endometriosis dan non endometriosis yaitu masing-masing sebesar  $0,65 \pm 0,20$  dan  $0,92 \pm 0,24$  ( $p=0,0015$ ). **Kesimpulan:** Ekspresikan makrofag M dan makrofag M2 pada serpihan darah menstruasi wanita endometriosis lebih tinggi dibanding wanita non endometriosis. Rasio M1/M2 serpihan darah menstruasi wanita endometriosis lebih rendah dibanding wanita non endometriosis.

**Kata kunci:** Darah menstruasi, Endometriosis, Imunohistokimia, Makrofag M1, M2

## THE DIFFERENT OF M1 AND M2 MACROPHAGE EXPRESSION IN MENSTRUAL BLOOD FLAKES FROM WOMEN WITH AND WITHOUT ENDOMETRIOSIS

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### ABSTRACT

**Background:** Endometriosis is a disease that is difficult to early detection. Diagnosis of endometriosis is a major challenge in the clinical management of this disease. Pathogenesis of endometriosis involves many factors, including the immune system. It has been reported an increase expression of macrophages in ectopic and eutopic endometrium of women with endometriosis. Until now there is no research studied about macrophages expression in menstrual blood of women with endometriosis. Research on menstrual blood is expected to assist in explaining the pathogenesis and finding biomarkers as supporting the diagnosis and monitoring of endometriosis. **Objectives:** To measure and prove the increase of panmakrofag, macrophages M1 and M2 expression and ratio of M1/M2 in menstrual blood flakes of women with endometriosis and without endometriosis. **Methods:** Cross sectional observational analytic study was conducted on 30 subjects endometriosis and non-endometriosis. Immunohistochemical staining is done on a sample of menstrual blood flakes of subjects study who taken at the second or third day of menstrual cycles with CD68 and CD163 antibody to measure the expression panmakrofag and M2 macrophages. Expression of M1 macrophages is the approach of a reduction expression of panmakrofag with M2 macrophages. **Results:** The expression of M1, M2 and the ratio M1/M2 in the both of groups had a normal distribution then continued by independent t-test with one-tailed (0.05). Probability is considered statistically significant at  $p < 0.05$  with a confidence interval of 95%. Based on the statistical result, M macrophage expression in endometriosis and control group amounted to  $3.62 \pm 0.50$  and  $2.80 \pm 0.64$  ( $p = 0.0005$ ) with non parametric test. The expression of M1 macrophages in endometriosis group and non endometriosis respectively  $1.40 \pm 0.35$  and  $1.33 \pm 0.40$  ( $p = 0.3005$ ) and the expression of M2 in both of group, respectively of  $2.23 \pm 0.41$  and  $1.47 \pm 0.36$  ( $p = 0.0005$ ). The ratio of M1 / M2, the endometriosis group and non endometriosis, respectively of  $0.65 \pm 0.20$  and  $0.92 \pm 0.24$  ( $p = 0.0015$ ). **Conclusions:** There were significant increased in the panmakrofag M , M2 macrophages expression on a woman's menstrual blood flakes endometriosis and significant decreased in ratio M1/M2 in the woman's menstrual blood flakes endometriosis.

**Keywords:** Endometriosis, Immunohistochemistry, Macrophages M1, M2, Menstrual blood.