

PERBEDAAN KADAR SUPEROXIDE DISMUTASE PADA REMAJA DENGAN DISMENORE DAN TANPA DISMENORE

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Article Info	ABSTRAK
Article History: Received 21/08/2026 Revised - Accepted 02/09/2026 Keywords: Superoxide dismutase Primary dysmenorrhea Adolescents Oxidative stress Biomarker	Dismenore primer merupakan salah satu masalah kesehatan reproduksi yang banyak dialami remaja putri dan dapat mengganggu aktivitas sehari-hari serta kehadiran di sekolah, sehingga berpotensi menghambat proses pembelajaran. Secara biologis, dismenore primer berkaitan dengan peningkatan kontraksi uterus yang menyebabkan vasospasme arteriol, iskemia, dan peningkatan pembentukan radikal bebas. Superoxide dismutase merupakan enzim antioksidan yang berperan sebagai pertahanan primer terhadap stres oksidatif. Penelitian ini bertujuan untuk mengetahui perbedaan kadar superoxide dismutase pada remaja dengan dismenore dan tanpa dismenore. Penelitian ini menggunakan desain observasional dengan pendekatan cross-sectional comparative yang dilaksanakan di Laboratorium Biomedik Fakultas Kedokteran Universitas Andalas pada Mei–Juli 2014. Sampel penelitian terdiri atas 68 remaja, masing-masing 34 remaja dengan dismenore dan 34 remaja tanpa dismenore. Kadar superoxide dismutase diperiksa menggunakan metode enzyme-linked immunosorbent assay, kemudian data dianalisis menggunakan uji Mann–Whitney dengan tingkat kemaknaan $p < 0,05$. Hasil penelitian menunjukkan rata-rata kadar superoxide dismutase pada remaja dengan dismenore adalah 36,76 U/mL, sedangkan pada remaja tanpa dismenore adalah 32,24 U/mL. Meskipun kadar superoxide dismutase tampak lebih tinggi pada kelompok dismenore, perbedaan tersebut tidak bermakna secara statistik ($p = 0,345$). Dengan demikian, tidak ditemukan perbedaan bermakna kadar superoxide dismutase antara remaja dengan dismenore dan tanpa dismenore. Temuan ini mengindikasikan bahwa superoxide dismutase sebagai biomarker tunggal belum cukup menggambarkan kompleksitas stres oksidatif pada dismenore primer. Penelitian selanjutnya disarankan menggunakan jumlah sampel yang lebih besar, mengendalikan faktor perancu, menstandarkan fase siklus menstruasi, serta mengevaluasi panel biomarker secara simultan, khususnya malondialdehyde sebagai indikator peroksidasi lipid dan total antioxidant status sebagai gambaran kapasitas antioksidan, agar diperoleh pemahaman yang lebih komprehensif mengenai mekanisme biologis dismenore primer.
	ABSTRACT <i>Primary dysmenorrhea is one of the most common reproductive health problems experienced by adolescent girls and may interfere with daily activities and school attendance, thereby potentially affecting the learning process. Biologically, primary dysmenorrhea is associated with increased uterine contractions, which may cause arteriolar vasospasm, ischemia, and increased free radical formation. Superoxide dismutase is an antioxidant</i>

enzyme that serves as a primary defense against oxidative stress. This study aimed to determine the difference in superoxide dismutase levels between adolescents with and without dysmenorrhea. This study employed an observational design with a comparative cross-sectional approach and was conducted at the Biomedical Laboratory, Faculty of Medicine, Universitas Andalas, from May to July 2014. The study included 68 adolescents, consisting of 34 adolescents with dysmenorrhea and 34 adolescents without dysmenorrhea. Superoxide dismutase levels were measured using the enzyme-linked immunosorbent assay (ELISA) method. The data were analyzed using the Mann–Whitney test, with a significance level of $p < 0.05$. The results showed that the mean superoxide dismutase level was 36.76 U/mL in adolescents with dysmenorrhea and 32.24 U/mL in those without dysmenorrhea. Although the superoxide dismutase level was higher in the dysmenorrhea group, the difference was not statistically significant ($p = 0.345$). Therefore, no statistically significant difference in superoxide dismutase levels was found between adolescents with and without dysmenorrhea. These findings suggest that superoxide dismutase alone may not be sufficient to fully characterize the complexity of oxidative stress in primary dysmenorrhea. Further studies should include larger sample sizes, control for potential confounding factors, standardize the menstrual cycle phase, and simultaneously evaluate a panel of biomarkers, particularly malondialdehyde as an indicator of lipid peroxidation and total antioxidant status as a measure of antioxidant capacity. Such an approach may provide a more comprehensive understanding of the biological mechanisms underlying primary dysmenorrhea.

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