PERBEDAAN KADAR INTERLEUKIN 10 (IL-10) PASCA INDUKSI BERBAGAI MODEL STRES *SLEEP DEPRIVATION* TIKUS PUTIH (*Rattus norvegicus*) JANTAN

Mochammad Haikal Alhamdi, Fitranto Arjadi, Joko Setyono
Fakultas Kedokteran Universitas Jenderal Soedirman, Purwokerto, Indonesia
Email: Email: mochammad.alhamdi@mhs.unsoed.ac.id

ABSTRAK

Latar Belakang: *Sleep deprivation* (SD) merupakan kondisi stres akibat kekurangan tidur sehingga meningkatkan ekspresi sitokin sebagai respon inflamasi. Respon inflamasi tersebut ditandai dengan peningkatan interleukin 10 (IL-10) yang merupakan sitokin anti-inflamasi utama untuk menekan respon inflamasi berlebih. Respon inflamasi saat *sleep deprivation* berdampak pada terjadinya penyakit metabolik. Dampak *sleep deprivation* dapat diredakan dengan *sleep recovery* (SR).
Tujuan: Mengetahui perbedaan kadar Interleukin 10 (IL-10) pada hewan coba pasca induksi berbagai model stres *sleep deprivation.*
Metode: Penelitian ini merupakan penelitian eksperimental dengan *post-test only with control group design.* Penelitian dilakukan pada 25 ekor tikus putih (*Rattus norvegicus)* jantan galur Wistar yang dibagi secara acak menjadi 5 kelompok percobaan yaitu kontrol, PSD (20 jam SD/hari selama 5 hari), TSD (24 jam SD/hari selama 5 hari), PSD+SR (Induksi PSD dilanjutkan SR selama 5 hari), dan TSD+SR (Induksi TSD dilanjutkan SR selama 5 hari). Pengukuran kadar IL-10 menggunakan *Bead-based Milliplex Assays* dengan teknologi Luminex yang dibandingkan kadarnya dengan kelompok kontrol menggunakan *fold change*
Hasil: Uji *One-way* ANOVA menunjukkan perbedaan yang tidak signifikan kadar IL-10 antar kelompok (p=0,065). Peningkatan kadar IL-10 paling tinggi terdapat pada kelompok TSD, yaitu 1,27-*fold.* Rerata kadar IL-10 tertinggi yaitu pada kelompok TSD (136,62±107,32 pg/ml).
Kesimpulan: Tidak terdapat perbedaan signifikan kadar IL-10 pada tikus putih (*Rattus* norvegicus) jantan pasca induksi berbagai model stres *sleep deprivation.* Penelitian selanjutnya perlu mengukur kadar hormon inflamasi lain serta mengukur kadar sitokin pada jaringan adiposa hewan coba

---

Kata kunci: inflamasi, interleukin 10, sitokin, *sleep deprivation, sleep recovery*

THE DIFFERENCE OF INTERLEUKIN 10 (IL-10) LEVEL IN MALE ALBINO RATS (Rattus norvegicus) AFTER INDUCTION OF VARIOUS STRESS MODELS OF SLEEP DEPRIVATION

Mochammad Haikal Alhamdi, Fitranto Arjadi, Joko Setyono
Faculty of Medicine, Jenderal Soedirman University, Purwokerto, Indonesia
Email: mochammad.alhamdi@mhs.unsoed.ac.id

ABSTRACT

Introduction: *Sleep deprivation (SD) is a stress condition that increases the cytokines expression as inflammatory response. Inflammatory response is characterized by increased interleukin 10 (IL-10) as the main anti-inflammatory cytokine to suppress excessive inflammatory response. Inflammatory response during sleep deprivation can occurs some metabolic diseases. The impact of sleep deprivation can be mitigated by sleep recovery (SR).*
Objective: *To determines the differences levels of Interleukin 10 (IL-10) in experimental animals after induction various stress models of sleep deprivattion.*
Methods: *This study used a true experimental method with postest only and control group design. Twenty five male albino rats were distributed into 5 groups consist of control group, PSD (20 hours of SD/day 5 days), TSD (24 hours of SD/days 5 days), PSD+SR (PSD induction then SR 5 days), dan TSD+SR (TSD induction then SR 5 days). Measurement of IL-10 levels using Bead-based Milliplex Assays with Luminex technology, which levels were compared with the control group using fold change*
Results: *One-way ANOVA test showed no significant difference in IL-10 levels between groups (p=0.065). The increase in IL-10 levels was highest in the TSD group, which was 1.27-fold. The highest mean level of IL-10 was in the TSD group (136.62±107.32 pg/ml).*
Conclusions: *There was no significant difference levels of IL-10 cytokine in male albino rats (Rattus norvegicus) after induction various stress models of sleep deprivation. Future studies need to measure levels of other inflammatory hormones and measure cytokine levels in adipose tissue*

Key Words*: cytokines, inflammation, interleukin 10, sleep deprivation, sleep recovery*