

PERBEDAAN JUMLAH SPERMATOZOA PADA TIKUS PUTIH (*Rattus norvegicus*) JANTAN PASCA INDUKSI BERBAGAI MODEL STRES SLEEP DEPRIVATION

ABSTRAK

Latar Belakang : Stres akibat *paradoxical sleep deprivation* (PSD) dan *total sleep deprivation* (TSD) dapat menyebabkan peningkatan stres oksidatif, mengaktifasi HPA, gangguan pada HPG yang berhubungan dengan infertilitas. *Sleep recovery* (SR) dapat menurunkan produksi radikal bebas dengan mekanisme pemulihan kadar antioksidan sehingga dapat memperbaiki fungsi reproduksi pria.

Tujuan : Mengetahui perbedaan jumlah spermatozoa pada tikus putih (*Rattus norvegicus*) jantan pasca induksi berbagai model stres *sleep deprivation*

Metode : Penelitian ini merupakan penelitian eksperimental dengan desain *posttest only with control group*. Tiga puluh ekor tikus putih dibagi secara acak menjadi 5 kelompok yakni 1 (kontrol sehat), 2 (PSD 20 jam/ hari selama 5 hari), 3 (TSD 24 jam/ hari selama 5 hari), PSD + SR (20 jam/ hari selama 5 hari dilanjutkan dengan *sleep recovery* selama 5 hari berikutnya), dan TSD + SR (24 jam/ hari selama 5 hari dilanjutkan dengan *sleep recovery* selama 5 hari berikutnya)

Hasil : Rerata jumlah spermatozoa tertinggi terdapat pada kelompok 1 ($56,69 \pm 10,80$), diikuti kelompok 4 ($52,71 \pm 7,18$), kelompok 2 ($46,51 \pm 7,70$), kelompok 5 ($44,00 \pm 13,11$), dan kelompok terendah adalah kelompok 3 ($41,53 \pm 2,29$). Uji One Way ANOVA menunjukkan tidak terdapat perbedaan signifikan ($p > 0,05$) rerata jumlah spermatozoa pada semua kelompok penelitian

Kesimpulan : Tidak terdapat perbedaan signifikan rerata jumlah spermatozoa pada tikus putih (*Rattus norvegicus*) jantan pasca induksi berbagai model stres *sleep deprivation*

Kata kunci : Jumlah Spermatozoa, *Paradoxical Sleep Deprivation*, *Total Sleep Deprivation*, *Sleep Recovery*

**THE DIFFERENCE OF SPERMATOZOA COUNT IN MALE ALBINO RATS
(*Rattus norvegicus*) AFTER INDUCTION OF VARIOUS MODELS OF
SLEEP DEPRIVATION STRESS**

ABSTRACT

Background : Stress caused by paradoxical sleep deprivation (PSD) and total sleep deprivation (TSD) is able to increased oxidative stress, activated HPA, and disrupt of HPG which related with infertility. Sleep recovery (SR) can decreased free radical production by mechanism of recovery of antioxidant levels there by improving male reproductive function

Objective : To know the difference of spermatozoa count in male albino rats (*Rattus norvegicus*) after induction of various models of sleep deprivation stress

Method : This research was an experimental research with posttest only and control group design. Thirty male albino rats were distributed into 5 groups, group 1 (health control), group 2 (PSD 20 hours/day sleep deprivation for 5 days), group 3 (TSD 24 hours/day sleep deprivation for 5 days), group 4 (PSD + SR 20 hours/day sleep deprivation for 5 days continued with sleep recovery for the next 5 days), and group 5 (TSD + SR 24 hours/ day sleep deprivation for the first 5 days continued with sleep recovery for the next 5 days)

Result : The highest mean of spermatozoa count was in group 1 ($56,69 \pm 10,80$), then group 4 ($52,71 \pm 7,18$), group 2 ($46,51 \pm 7,70$), group 5 ($44,00 \pm 13,11$), and the lowest was group 3 ($41,53 \pm 2,29$). One way ANOVA test showed no significant difference ($p > 0,05$) of spermatozoa count in all study groups

Conclusion : There was no significant difference of spermatozoa count in male albino rats (*Rattus norvegicus*) after induction various models of sleep deprivation stress

Keywords : Spermatozoa Count, Paradoxical Sleep Deprivation, Total Sleep Deprivation, Sleep Recovery