

Efek Pemberian Ekstrak Hibiscus sabdariffa Linn terhadap Inflamasi Jantung Tikus pada Kondisi Overtraining: Kajian IL-6, ERK5, dan TNF- = The Effect of Hibiscus sabdariffa Linn on Inflammatory Condition: Study of IL-6, ERK5, and TNF-

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Abstrak

Latihan fisik bermanfaat menjaga kesehatan dan meningkatkan performa atlet. Ketika menghadapi kompetisi, atlet kadang meningkatkan beban latihan tanpa istirahat cukup sehingga terjadi overtraining syndrome (OTS). Pada OTS ditemukan berbagai gejala adaptasi patologis berbagai sistem organ tubuh, termasuk di jantung. Selain itu, terjadi peningkatan kadar IL-6 dan TNF- sistemik. IL-6 akan berikatan dengan reseptornya dan mengaktifasi IL-6/MEK5/ERK5 sehingga terjadi hipertrofi jantung. Hibiscus sabdariffa Linn (HSL) diketahui memiliki efek anti inflamasi.

Penelitian ini ingin mengetahui pengaruh overtraining dan pemberian HSL pada overtraining terhadap status inflamasi jantung. Penelitian menggunakan jaringan jantung dari 25 ekor tikus Wistar berusia 8-10 minggu, berat badan 300-350 gram. Tikus dibagi menjadi 5 kelompok, yaitu kontrol (C), kontrol + Hibiscus (C+HSL), aerobik (A), Overtraining, dan Overtraining + HSL. Perlakuan dilakukan selama 11 minggu. Pada akhir penelitian, dilakukan pengukuran kadar IL-6, ERK5, dan TNF-.

Hasil penelitian menunjukkan kadar IL-6 dan ERK5 tidak berbeda bermakna antar kelompok. Kadar TNF- pada kelompok latihan fisik overtraining ($206,7 \pm 40,96$ pg/mg), lebih tinggi secara bermakna jika dibandingkan dengan kontrol ($93,03 \pm 20,23$ pg/mg). Pada kelompok overtraining + HSL, kadar IL-6 ($17,62 \pm 14,42$ pg/mg) dan TNF- ($44,95 \pm 6,252$ pg/mg) lebih rendah secara bermakna bila dibandingkan kelompok overtraining. Dari penelitian ini disimpulkan bahwa overtraining menyebabkan inflamasi di jantung dan pemberian HSL dapat mengurangnya.

.....Physical exercise is beneficial for maintaining health and increasing the performance of athletes. When facing a competition, athletes sometimes increase their training load without adequate rest so overtraining syndrome (OTS) occurred. Various symptoms of pathological adaptation in various body organ systems are found in OTS, including in the heart. In addition, there was an increase in IL-6 and systemic TNF- levels. IL-6 will bind to its receptors and activate IL-6/MEK5/ERK5 resulting in cardiac hypertrophy. Hibiscus sabdariffa Linn (HSL) is known to have anti-inflammatory effects.

This study wanted to find out the effect of overtraining and administration of HSL in overtraining on the inflammatory status of the heart. The study used heart tissue from 25 Wistar rats aged 8-10 weeks, weighing 300-350 grams. Rats were divided into 5 groups, namely control (C), control + Hibiscus (C + HSL), aerobics (A), Overtraining, and Overtraining + HSL. The treatment was carried out for 11 weeks. At the end of the study, IL-6, ERK5, and TNF- level were measured.

The results showed that level of IL-6 and ERK5 did not differ significantly between groups. TNF- level in the overtraining exercise group (206.7 ± 40.96 pg/mg) were significantly higher when compared to the controls (93.03 ± 20.23 pg/mg). In the overtraining + HSL group, IL-6 levels (17.62 ± 14.42 pg / mg) and TNF- (44.95 ± 6.252 pg/mg) were significantly lower than the overtraining group. It was concluded from this study that overtraining causes inflammation in the heart and administration of HSL can reduce it.