UJI EFEKTIVITAS PROTEIN TEMPE TERHADAP PEMULIHAN KERUSAKAN OTOT PADA KONDISI PASCA LATIHAN BEBAN

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Abstrak

Latihan beban menyebabkan mikrotrauma pada otot yang memicu peradangan dan menurunkan performa otot. Pemulihan optimal membutuhkan asupan protein yang cukup dan berkualitas untuk mendukung sintesis protein otot. Penelitian ini dilakukan untuk menguji efektivitas suplementasi protein tempe sebagai sumber protein alternatif dalam pemulihan kerusakan otot pasca latihan beban serta membandingkannya dengan protein whey dan plasebo. Desain penelitian menggunakan randomized placebo-controlled trial dengan 27 responden pria tidak terlatih yang dibagi menjadi tiga kelompok yaitu tempe, whey, dan plasebo. Intervensi dilakukan dengan pemberian masing-masing suplemen sebanyak 2 kali (sebelum dan sesudah latihan beban) serta hari selanjutnya pada masa pemulihan. Pengukuran dilakukan dengan menentukan kadar kreatin kinase (CK) pada baseline, 24 jam, dan 48 jam pasca latihan serta penilaian nyeri otot menggunakan Numeric Pain Rating Scale (NPRS) pada 24, 48, dan 72 jam pasca latihan. Hasil penelitian menunjukkan bahwa meskipun tidak terdapat perbedaan signifikan pada kadar CK antar kelompok ($p > 0.05$), tren peningkatan CK pada kelompok tempe cenderung lebih rendah dibandingkan kelompok whey dan plasebo. Sementara itu, penurunan tingkat nyeri otot pada kedua kelompok perlakuan (tempe dan whey) lebih signifikan dibandingkan plasebo ($p < 0.05$). Temuan ini mengindikasikan bahwa protein tempe berpotensi menjadi alternatif suplemen yang efektif dan terjangkau untuk mendukung pemulihan otot.

Kata Kunci : protein tempe, pemulihan otot, latihan beban, kreatin kinase, nyeri otot

EVALUATION OF THE EFFICACY OF TEMPE PROTEIN ON MUSCLE DAMAGE RECOVERY FOLLOWING RESISTANCE TRAINING

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Abstract

Resistance training causes microtrauma to muscle fibers, leading to inflammation and reduced performance. Optimal recovery requires adequate and high-quality protein intake to support muscle protein synthesis. This study evaluated the effectiveness of tempe protein supplementation as an alternative protein source for muscle damage recovery after resistance training and compared its efficacy with whey protein and placebo. A randomized placebo-controlled trial was conducted with 27 untrained male subjects randomly assigned to one of three groups: tempe protein, whey protein, or placebo. Supplements were administered twice, before and after resistance training, as well as the following day during the recovery period. Creatine kinase (CK) levels were measured at baseline, 24 hours, and 48 hours post-exercise. Muscle soreness scores were assessed using the Numeric Pain Rating Scale (NPRS) at 24, 48, and 72 hours post-exercise. Although no statistically significant difference in CK levels was found among the groups ($p > 0.05$), the tempe group showed the smallest increase. Meanwhile, the decrease in muscle soreness in both treatment groups (tempe and whey) was more significant than placebo group ($p < 0.05$). These findings suggest that tempe protein has the potential to serve as an effective and affordable alternative supplement for enhancing muscle recovery.

Keyword : tempeh protein, muscle recovery, resistance training, creatine kinase, muscle soreness