

**PENGARUH SUPLEMENTASI PROTEIN SUSU
TERHADAP PERFORMA OTOT DAN
STATUS ANTIOKSIDAN TOTAL PADA ATLET
SEPAK BOLA**

*THE EFFECT OF MILK PROTEIN SUPPLEMENTATION ON
MUSCLE PERFORMANCE AND TOTAL ANTIOXIDANT
STATUS ON SOCCER ATHLETES*



Tesis

**Untuk memenuhi sebagian persyaratan
mencapai derajat S2**

Magister Ilmu Gizi

**Muhammad Irwan Setiawan
22030116410009**

**FAKULTAS KEDOKTERAN
UNIVERSITAS DIPONEGORO
SEMARANG**

**Juni
2018**

ABSTRACT

THE EFFECT OF MILK PROTEIN SUPPLEMENTATION ON MUSCLE PERFORMANCE AND TOTAL ANTIOXIDANT STATUS ON SOCCER ATHLETES

MUHAMMAD IRWAN SETIAWAN

Background : High of ROS can decrease muscle performance and closely related to the success of competition. Milk proteins (whey and casein) have essential and non essential amino acids that were beneficial to muscle performance through increased antioxidant.

Objective : to analyze the effect of milk protein supplementation on muscle performance and total antioxidant status (TAS) on soccer athletes.

Method : randomized controlled trial pretest and post test was conducted on 20 male athletes aged 16-18 years at PPLP Central Java Soccer Club. The treatment group received 24 grams of milk protein and the control group received 24 grams of maltodextrin as placebo for 28 days. Muscle performances were measured through 20 m sprint, shuttle run, illinois run, standing broad jump, sit up, push up, and 1RM leg extension. TAS was measured by [2,2'-azinobis (3ehylbenzothiazoline-6-sulfonate)] ABTS methode. Data were analyzed by T test and GLM.

Result : there were no difference in muscle performance and TAS at baseline. Age and selenium intake as confounding variables. After adjustment by age, selenium intake, and pre-treatment performance, there were significant differences for shuttle run (6.06 sec vs 6.32 sec, SE=0.04), sit up (67.74 times/60 sec vs 62.06 times/60 sec, SE=0.82), and 1RM leg estension (133.47 kg vs 108.03 kg, SE=5.78). Otherwise, 20 m sprint, illinois run, standing broad jump, and push up were not significantly different ($p>0.05$). TAS is also higher than control (1.29 mmol/L vs 0.88mmol/L, SE=0.10) after adjustment by age, selenium intake, and SAT before treatment.

Conclusion : milk proteins supplementation for 28 days increased muscle performance and TAS

Keywords : milk protein, muscle performance, TAS.

ABSTRAK

PENGARUH SUPLEMENTASI PROTEIN SUSU TERHADAP PERFORMA OTOT DAN STATUS ANTIOKSIDAN TOTAL PADA ATLET SEPAK BOLA

MUHAMMAD IRWAN SETIAWAN

Latar Belakang: Tingginya ROS dapat menurunkan performa otot dan mempengaruhi keberhasilan pertandingan. Protein susu (*whey* dan kasein) memiliki asam amino esensial dan non esensial yang bermanfaat pada performa otot melalui peningkatan antioksidan.

Tujuan: menganalisis pengaruh pemberian protein susu pada performa otot dan status antioksidan total (SAT) pada atlet sepak bola.

Metode: uji acak terkontrol *pretest–post test* dilaksanakan pada 20 atlet laki-laki usia 16-18 tahun di Klub Sepak Bola PPLP Jawa tengah. Kelompok perlakuan diberi 24 gram protein susu dan kelompok kontrol diberi 24 gram maltodekstrin sebagai plasebo selama 28 hari. Performa otot diukur melalui *sprint 20 m*, *shuttle run*, *illinois run*, *standing broad jump*, *sit up*, *push up*, dan *IRM leg extension*. SAT diukur dengan metode [2,2'-azinobis (3ehylbenzothiazoline-6-sulfonate)]/ABTS. Data dianalisis menggunakan *T tes* dan *GLM univariate*.

Hasil: tidak ada perbedaan performa otot dan SAT pada *baseline*. Usia dan asupan selenium sebagai variabel perancu. Setelah dikontrol dengan usia, asupan selenium, dan performa sebelumnya, terdapat perbedaan signifikan ($p < 0,05$) pada *shuttle run* (6,06 detik vs 6,32 detik, SE=0,04), *sit up* (67,74 kali/60 detik vs 62,06 kali/60 detik, SE=0,82), dan *IRM leg estension* (133,47 kg vs 108,03 kg, SE=5,78). Disisi lain, *sprint 20 m*, *illinois run*, *standing broad jump*, dan *push up* tidak berbeda signifikan ($p > 0,05$). SAT juga lebih tinggi dibandingkan kontrol (1,29 mmol/L vs 0,88 mmol/L, SE=0,10) setelah dikendalikan dengan usia, asupan selenium, dan SAT sebelum perlakuan.

Kesimpulan: suplementasi protein susu selama 28 hari dapat meningkatkan performa otot dan SAT.

Kata Kunci: protein susu, performa otot, SAT.