ABSTRACT

THE EFFECT OF PURPLE SWEET POTATOES EXTRACT TOWARDS MALONDIALDEHYDE (MDA) AND SUPEROXIDE DISMUTASE (SOD) LEVELS ON WISTAR RATS INDUCED MAXIMAL PHYSICAL ACTIVITY

Oxidative stress is a condition caused by the imbalance between the production of free radicals or ROS and the antioxidants; the level of free radicals is higher than the antioxidants. The maximum physical activity is one of the causes of this oxidative stress. However, it can be reduced by antioxidants found in purple sweet potatoes (*Ipomoea batatas* L). Therefore, due to this concern, this study aims to investigate the role of purple sweet potatoes extract in reducing the level of MDA dan increasing the level of SOD after being exposed to maximum physical activity.

The study was an experimental laboratories using Wistar rats (*Rattus norvegicus*) as samples study. 25 rats was distibuted into 5 groups consisted 5 rats each. The first experiment was the treatments using purple sweet potatoes extract by determining the following dosages; 0,5 mL, 1 mL, dan 2 mL per day for two weeks. 15 rats then induced by exhausted physical activity. In the end of the research, the bloods from all samples were drawn to see the changes in the levels of malondialdehyde and superoxide dismutase after two weeks of treatment. The data then was analyzed using descriptive and inferential statistic.

As a results, it was found that the average level of MDA and SOD contents differ significantly ($p<0.05$) among each groups after the extracts has been given as well as after the physical training. The extracts and the physical training concurrently showed a significant effect ($p<0.05$). It was recorded that MDA is in the higher level while is in the lower level significantly ($p<0.05$) in groups induced with exhausted physical activity.

In general, it could be concluded that the physical training combined with purple sweet potatoes extract reduce oxidative stress by the reduction of MDA and the increasing of SOD.

Keywords: Purple Sweet Potatoes, Physical Activity, Oxidative Stress, MDA, SOD

ABSTRAK

PENGARUH PEMBERIAN EKSTRAK UBI JALAR UNGU TERHADAP KADAR MALONDIALDEHID (MDA) DAN SUPEROKSIDA DISMUTASE (SOD) PADA TIKUS WISTAR JANTAN SETELAH AKTIVITAS FISIK MAKSIMAL

Stres oksidatif merupakan suatu kondisi ketidakseimbangan antara produksi radikal bebas atau *Reactive oxygen species* (ROS) dengan antioksidan, di mana kadar radikal bebas lebih tinggi dibandingkan antioksidan. Salah satu penyebab stres oksidatif adalah aktivitas fisik maksimal. Stres oksidatif dapat dikurangi dengan pemberian antioksidan. Salah satu sumber antioksidan adalah ubi jalar ungu (*Ipomoea batatas* L) yang mengandung antosianin. Penelitian ini bertujuan untuk mengetahui pengaruh ekstrak ubi jalar ungu (*Ipomoea batatas* L) dalam menurunkan kadar *Malondialdehyde* (MDA) dan meningkatkan kadar *Superoxide dismutase* (SOD) pada tikus Wistar (*Rattus norvegicus*) setelah aktivitas fisik maksimal.

Penelitian ini merupakan penelitian eksperimental laboratorium dengan rancangan *posttest only*. Subyek dalam penelitian berupa 25 ekor tikus yang dibagi ke dalam lima kelompok percobaan, terdiri dari dua kelompok kontrol dan tiga kelompok perlakuan. Pada kelompok perlakuan, tikus diberi ekstrak ubi jalar ungu dengan dosis 0,5 mL, 1 mL, dan 2 mL per hari selama dua minggu. Tikus juga diberi perlakuan berupa akivitas fisik maksimal berupa renang sampai lelah. Pada akhir penelitian dilakukan pengukuran terhadap kadar MDA dan SOD. Data dianalisis secara deskriptif dan inferensial menggunakan *Anova one way*.

Hasil penelitian menunjukkan bahwa rata-rata kadar MDA dan SOD antar kelompok berbeda secara signifikan ($p<0,05$). Kadar MDA paling tinggi terdapat pada kelompok kontrol positif, sedangkan kadar SOD paling tinggi terdapat pada kontrol negatif. Peningkatan dosis ubi jalar ungu secara signifikan dapat menurunkan kadar MDA ($p<0,05$) dan meningkatkan kadar SOD ($p<0,05$) pada tikus setelah diberi beban berupa aktivitas fisik maksimal.

Secara umum dapat disimpulkan bahwa pelatihan fisik dengan ekstrak ubi jalar ungu dapat menurunkan stres oksidatif melalui penurunan MDA dan peningkatan kadar SOD.

Kata Kunci: *Ubi Jalar Ungu, Aktivitas Fisik, Stres Oksidatif, MDA, SOD*