

ABSTRACT

THE EFFECT OF THE JUICE OF BEANS (PHASEOLUS VULGARIS LINN) AGAINST SOD, MDA AND BLOOD GLUCOSE LEVELS (EXPERIMENTAL STUDY ON WHITE RATS WISTAR STRAIN MALE MODEL OF PSYCHOLOGICAL STRESS)

Psychological stress is often suffered people with body rhythm disorders, such as sleep disorders upside down. Psychological stress can trigger oxidative stress, and it can be overcome by increasing antioxidants. Beans as antioxidants are considered to reduce oxidative stress. The aims of this study were to examine the effect of beans juice on SOD levels, MDA levels and blood glucose levels in white male rats strain wistar exposed by psychological stress.

This study was Randomized Post Test Only Group Design. There were 5 groups tested, normal and stress control group, and 3 treatment groups. Psychological stress exposure was given to disturb sleep pattern, so that the condition of experimental animals experiencing oxidative stress, then given beans juice dose of 4.5 gram for treatment group.

The results showed that SOD levels in treatment group increased after the 1st hour of giving beans juice and increased maximally at 24 hours. MDA levels and glucose levels dropped during the first hour and persisted down until the 24th hour after giving beans juice.

The effect of antioxidant flavonoids on beans decreases the amount of free radicals by scavenging mechanisms and increases endogenous antioxidants. Arginine in beans acts as a precursor to form Nitric Oxide (NO) as vasodilator of blood vessels which works to decrease oxidative stress.

It can be concluded that single dose of beans juice in experimental animals has been shown to overcome oxidative stress due to psychological stress exposure since the first hour of giving beans juice and its antioxidant levels persisted until the 24th hour.

Keywords: oxidative stress, psychological stress, beans juice, SOD, MDA, Blood glucose

ABSTRAK

**PENGARUH PEMBERIAN JUS BUNCIS (*PHASEOLUS VULGARIS LINN*)
TERHADAP KADAR SOD, KADAR MDA DAN KADAR GLUKOSA
DARAH (STUDI EKSPERIMEN PADA TIKUS PUTIH JANTAN STRAIN
WISTAR MODEL STRES PSIKOLOGIS)**

Stres psikologis sering diderita oleh orang dengan gangguan ritme tubuh, seperti pada gangguan tidur jaga terbalik. Stres psikologis dapat memicu terjadinya stres oksidatif, dan dapat diatasi dengan meningkatkan antioksidan. Buncis sebagai antioksidan dianggap dapat menurunkan stres oksidatif. Tujuan penelitian ini adalah menguji pengaruh pemberian jus buncis terhadap kadar SOD, kadar MDA dan glukosa darah pada tikus putih jantan strain wistar yang dipapar stres psikologis.

Penelitian ini menggunakan *Randomized Post Test Only Group Design*. Terdapat 5 kelompok yang diuji, kelompok kontrol normal dan stres, dan 3 kelompok perlakuan. Paparan stres psikologis diberikan untuk merubah pola tidur, sehingga kondisi hewan coba mengalami stres oksidatif, kemudian diberikan jus buncis dengan dosis 4,5 gram pada kelompok perlakuan.

Hasil penelitian menunjukkan kadar SOD kelompok perlakuan meningkat setelah jam ke-1 pemberian jus buncis dan meningkat maksimal pada jam ke-24. Kadar MDA dan glukosa turun pada jam pertama dan tetap bertahan turun hingga jam ke-24 setelah pemberian jus buncis.

Pengaruh kandungan antioksidan flavonoid pada buncis menurunkan jumlah radikal bebas dengan mekanisme scavenging dan meningkatkan kadar antioksidan endogen. Arginin pada buncis berperan sebagai prekursor pembentukan *Nitric Oxide* (NO) sebagai vasodilator pembuluh darah sehingga dapat menurunkan stres oksidatif.

Berdasarkan hal tersebut, dapat disimpulkan dosis tunggal jus buncis pada hewan coba terbukti dapat mengatasi stres oksidatif akibat paparan stres psikologis sejak jam pertama pemberian jus buncis dan aktivitas antioksidannya masih bertahan sampai dengan jam ke-24.

Kata kunci: stres oksidatif, stres psikologis, jus buncis, SOD, MDA, Glukosa darah