

**PENGARUH PEMBERIAN LIKOPEN TERHADAP STATUS
ANTIOKSIDAN TIKUS (*Rattus norvegicus galur Sprague Dawley*)
HIPERKOLESTEROLEMIK**

ABSTRAK

Stres oksidatif disebabkan oleh ketidakseimbangan antara oksidan dan antioksidan. Likopen mungkin merupakan antioksidan makanan (eksogen), salah satu sumber utamanya adalah tomat (*Lycopersicon esculentum*). Likopen bekerja di dalam tubuh melalui mekanisme oksidatif dan non-oksidatif. Pemberian likopen diharapkan dapat meningkatkan status antioksidan lain, sehingga meningkatkan profil lipid dan mencegah oksidasi LDL. Tujuan penelitian ini adalah untuk mengetahui pengaruh dosis 0,72 likopen; 1,08 dan 1,44 mg terhadap status antioksidan pada tikus hiperkolesterolemia (*Rattus norvegicus* strain Sprague Dawley). Desain penelitian yang digunakan adalah post-test-only control group design pada tikus Sprague Dawley jantan berumur 12 minggu yang dibagi menjadi 4 kelompok. Kelompok P0 (kontrol) mendapat diet tinggi lemak tinggi kolesterol (TLTK). Sedangkan P1, P2 dan P3 masing-masing mendapat ransum TLTK ditambah 0,36 likopen; 0,72 dan 1,08 mg/ekor/hari. Likopen diekstraksi dari tomat lokal (*Lycopersicon esculentum*) varietas Braight Pearl F1 menggunakan teknologi ekstraksi TLC (Thin Layer Chromatograph). Kadar vitamin C (plasma), vitamin E (serum) dan glutathione peroksidase/GPx (darah) dianalisis secara spektrofotometri dan enzimatis. Hipotesis yang digunakan adalah Anova dan LSD dengan tingkat kepercayaan 5. Semakin tinggi dosis likopen maka semakin tinggi pula kadar vitamin C dan E dibandingkan kelompok kontrol. Uji kadar vitamin C dan vitamin E pada keempat kelompok berbeda nyata (*Anova* $p=0,00$ dan $p=0,00$). Perbedaan ini sangat signifikan antara kelompok perlakuan vitamin C dan vitamin E (*LSD*, $p_{0-1}=0,00$; $p_{0-2}=0,00$; $p_{0-3}=0,00$, $p_{1-2}=0,00$; $p_{1-3}=0,00$; $p_{2-3}=0,00$). Kadar GPx menurun pada kelompok perlakuan dan berbeda secara signifikan baik pada kelompok perlakuan maupun antar kelompok perlakuan. Pemberian likopen 0,36; 0,72 dan 1,08 mg/ekor/hari meningkatkan kadar vitamin C dan E pada hewan hiperkolesterolemia dan menurunkan kadar GPx.

Kata Kunci: likopen, status antioksidan (vitamin C, vitamin E dan GPx), hiperkolesterolemia

**EFFECTS OF LYCOPENE ADMINISTRATION
ON ANTIOXIDANT STATUS RATS (*Rattus norvegicus* Sprague Dawley
strain) HYPERCHOLESTEROLEMIC**

ABSTRACT

Oxidative stress is caused by an imbalance between oxidants and antioxidants. Lycopene may be a dietary (exogenous) antioxidant, one of the main sources being tomatoes (*Lycopersicon esculentum*). Lycopene works in the body through oxidative and non-oxidative mechanisms. The administration of lycopene is expected to increase the status of other antioxidants, thereby improving the lipid profile and preventing LDL oxidation. The aim of this study was to determine the effect of a dose of 0.72 lycopene; 1.08 and 1.44 mg on antioxidant status in hypercholesterolemic rats (*Rattus norvegicus* strain Sprague Dawley). The research design used was a post-test-only control group design on 12 week old male Sprague Dawley rats divided into 4 groups. The P0 group (control) received a high fat, high cholesterol (TLTK) diet. Meanwhile, P1, P2 and P3 each received TLTK rations plus 0.36 lycopene; 0.72 and 1.08 mg/head/day. Lycopene is extracted from local tomatoes (*Lycopersicon esculentum*) Bright Pearl F1 variety using TLC (Thin Layer Chromatograph) extraction technology. Vitamin C (plasma), vitamin E (serum) and glutathione peroxidase/GPx (blood) levels were analyzed spectrophotometrically and enzymatically. The hypothesis used was Anova and LSD with a confidence level of 5. The higher the dose of lycopene, the higher the levels of vitamins C and E compared to the control group. Tests for vitamin C and vitamin E levels in the four groups were significantly different (Anova $p=0.00$ and $p=0.00$). This difference was very significant between the vitamin C and vitamin E treatment groups (LSD, $p_{0-1}=0.00$; $p_{0-2}=0.00$; $p_{0-3}=0.00$, $p_{1-2}=0.00$; $p_{1-3}=0.00$; $p_{2-3}=0.00$). GPx levels decreased in the treatment group and differed significantly both within the treatment group and between treatment groups. Giving lycopene 0.36; 0.72 and 1.08 mg/head/day increased vitamin C and E levels in hypercholesterolemic animals and reduced GPx levels.

**Keywords: lycopene, antioxidant status (vitamin C, vitamin E and GPx)
hypercholesterolemia**

