

INTISARI

PENGARUH 7-HIDROKSI-2-(4-HIDROKSI-3-METOKSI-FENIL)-KROMAN-4-ON TERHADAP KADAR MANGAN-SUPEROKSIDA DISMUTASE (Mn-SOD) DAN EKSPRESI GEN SUPEROKSIDA DISMUTASE 2 (SOD2) PADA HEPAR TIKUS HIPERLIPIDEMIA

Latar belakang: Hiperlipidemia merupakan suatu kelainan metabolisme lipid yang ditandai dengan terjadinya peningkatan kadar lipid dalam darah. Hiperlipidemia menjadi faktor risiko utama berbagai penyakit sindrom metabolik dikarenakan memicu stres oksidatif. Stres oksidatif dapat dikurangi lajunya dengan mekanisme enzim antioksidan endogen yang dipicu regulasinya oleh senyawa antioksidan eksogen, seperti 7-OH-2-(4-OH-3-metoksifenil)-kroman-4-on yang diisolasi dari biji *Swietenia macrophylla* King.

Tujuan: Penelitian ini bertujuan mengkaji efek senyawa 7-OH-2-(4-OH-3-metoksifenil)-kroman-4-on terhadap kadar kolesterol, LDL, kadar Mn-SOD dan ekspresi gen SOD2 tikus hiperlipidemia.

Metode: Sebanyak 30 ekor tikus (*Rattus norvegicus*) dibagi menjadi 6 kelompok, kelompok normal, kelompok hiperlipidemia, kelompok hiperlipidemia dengan simvastatin, kelompok hiperlipidemia dengan 7-OH-2-(4-OH-3-metoksifenil)-kroman-4-on dosis 30, 60 dan 90 mg/200gBB. Analisis kolesterol dan LDL menggunakan metode CHOD-PAP, analisis kadar Mn-SOD dengan ELISA dan analisis ekspresi gen dengan qPCR.

Hasil: Kadar kolesterol dan LDL paling baik penurunannya pada kelompok 6 dosis 7-OH-2-(4-OH-3-metoksifenil)-kroman-4-on 90 mg/200gBB, yaitu dengan selisih rerata masing-masing sebesar 172,43 mg/dL dan 36,12 mg/dL. Kadar Mn-SOD yang memiliki nilai tidak berbeda nyata dengan kelompok normal, yaitu kelompok 6 ($p < 0,05$). Ekspresi SOD2 yang memiliki nilai mendekati kelompok normal yaitu pada kelompok perlakuan 6 ($p > 0,05$).

Kesimpulan: Senyawa 7-OH-2-(4-OH-3-metoksifenil)-kroman-4-on dengan dosis 90 mg/200gBB mampu memperbaiki kadar kolesterol, LDL, kadar Mn-SOD dan ekspresi gen SOD2 pada tikus hiperlipidemia.

Kata kunci: Hiperlipidemia, flavonoid, Mn-SOD, gen SOD2.

ABSTRACT

EFFECT OF 7-HIDROXY-2-(4-HIDROXY-3-METOXY-PHENIL)- CROMAN-4-ON ON LEVEL OF MANGAN-SUPEROKSIDA DISMUTASE (Mn-SOD) AND SUPEROKSIDA DISMUTASE 2 (SOD2) GENE EXPRESSION IN LIVER HYPERLIPIDEMIA RATS

Background: Hyperlipidemia is a lipid metabolism disorder characterized by an increase in serum lipid levels. Hyperlipidemia is a major risk factor for many metabolic syndrome diseases because it triggers oxidative stress. Oxidative stress can be reduced by the mechanism of endogenous antioxidant enzymes triggered by regulation by exogenous antioxidant compounds, such as 7-OH-2- (4-OH-3-methoxyphenyl) -chroman-4-on isolated from the seeds of *Swietenia macrophylla* King.

Aims: The aims of this study is to investigate the effects of 7-OH-2- (4-OH-3-methoxyphenyl) -chroman-4-on compounds on cholesterol level, LDL level, Mn-SOD levels and SOD2 gene expression of hyperlipidemic rats.

Methods: Thirty rats (*Rattus norvegicus*) were divided into 6 groups, normal group (N), hyperlipidemia group (HL), hyperlipidemia group with simvastatin (P), hyperlipidemic group with 7-OH-2- (4-OH-3-methoxyphenyl) -chroman-4-on with dose 10 (F10), 30 (F30) and 90 (F90) mg/200g body weight (bw). Cholesterol and LDL were analyzed with CHOD-PAP method, Mn-SOD level was analyzed by ELISA method and SOD2 gene expression was analyzed by qPCR method.

Results: The decrease in cholesterol and LDL levels were most prevalent in group F90 with dose 90 mg/200gbw of 7-OH-2- (4-OH-3-methoxyphenyl) -chroman-4-on, with average difference each of them were 172.43 mg / dL and 36.12 mg / dL. The rats fed on high-cholesterol diet exhibited a significant elevation in Mn-SOD levels ($p < 0.05$) compared to normal group. The treated animals with 7-OH-2- (4-OH-3-methoxyphenyl) -chroman-4-on showed a significantly reduced the level of SOD activity ($p < 0.05$) compared with hyperlipidemic group. Expression of SOD2 which has value close to normal group that is in treatment group 6 ($p > 0,05$).

Conclusions: 7-OH-2- (4-OH-3-methoxyphenyl) -chroman-4-on with dose of 90 mg/200gbw improved cholesterol levels, LDL levels, Mn-SOD levels and SOD2 gene expression in hyperlipidemic rats.

Keywords: Hyperlipidemia, flavonoids, Mn-SOD, SOD2 gene.