INTISARI

Latar Belakang: Diabetes Mellitus (DM) dapat menyebabkan atropi otot melalui jalur inflamasi Nuclear Factor Kappa-Light-Chain-Enhancer of Activated B Cells (NF-κB) serta jalur apoptosis caspase-3. Pemberian asam klorogenat (CGA) telah diketahui memberi efek antioksidan dan antiapoptosis tetapi diperlukan studi lebih lanjut terkait pengaruh CGA terhadap muscle wasting pada model DM tipe 1.

Tujuan Penelitian: Penelitian ini untuk mengkaji peran asam klorogenat terhadap atropi otot dengan mengukur ekspresi mRNA NF-κB serta caspase-3 pada tikus diabetes mellitus.

Metode: Tikus jantan Wistar dibagi dalam 6 kelompok : kelompok kontrol (C), kelompok DM yang diinduksi dengan injeksi intraperitonial streptozotocin 60 mg/kgBB selama 1,5 bulan (DM1,5), dan 2 bulan (DM2), serta kelompok DM1,5 lain dengan pembagian 3 dosis CGA yakni 12,5 mg/kgBB (CGA12,5) , 25 mg/kgBB (CGA25) dan 50 mg/kgBB (CGA50). Tikus diterminasi dengan ketamin lalu diambil otot soleus untuk untuk ekstraksi RNA. Ekspresi mRNA NF-κB dan caspase-3 diukur dengan *Reverse Transcriptase-Polymerase Chain Reaction* (RT-PCR).

Hasil Penelitian: Ekspresi mRNA NF-κB dan caspase-3 pada semua kelompok DM lebih tinggi dibandingkan kelompok kontrol. Terdapat tren peningkatan ekspresi mRNA NF-κB pada kelompok CGA seiring peningkatan dosis. Hasil ekspresi mRNA caspase-3 kelompok CGA lebih rendah dibanding kelompok DM, terutama CGA25 dan CG50 yang signifikan dibanding DM2.

Kesimpulan: Asam klorogenat (CGA) dosis 12.5 mg/kgBB memperbaiki komplikasi DM pada otot dengan menunjukan ekspresi mRNA NF-κB and caspase-3 lebih rendah dibandingkan kelompok diabetes mellitus.

Kata kunci: *Asam klorogenat, diabetes mellitus, atrofi, inflamasi,apoptosis, NF-κB, caspase-3.*

ABSTRACT

Background: Diabetes Mellitus (DM) can cause muscle atrophy through inflamation pathway Nuclear Factor Kappa-Light-Chain-Enhancer of Activated B Cells (NF-κB) expression and apoptotic pathway caspase-3. Chlorogenic acid was well known for its antioxidant effect and anti-apoptotic, but it still need further investigation.

Research Objectives: This study aims to determine the effect of chlorogenic acid (CGA) to muscle wasting by measuring expression of NF-κB and caspase-3 of diabetic mellitus rat model.

Methods: Thirty wistar male rat divided into 6 groups : control group, 1,5 month and 2 month diabetes mellitus group that induced by intraperitoneal injection of streptozotocin 60 mg/kgBB, 1,5 month diabetes mellitus group with 3 different doses of CGA (12,5 mg/kgBB, 25 mg/kgBB, and 50 mg/kgBB). Rat were terminated by ketamine, then soleus muscles were taken to extract RNA. Expression of mRNA NF-κB and caspase-3 were measured with Reverse Transcriptase-Polymerase Chain Reaction (RT-PCR).

Results: mRNA NF-κB and caspase-3 expression in all DM group were higher than the control group. There was upward trend in expression of NF-κB group CGA along with anhancement of doses CGA. Expression caspase-3 of CGA groups were lower than all DM group, especially CGA25 and CGA50.

Conclusion: Chlorogenic acid (CGA) at a dose of 12.5 mg/kgBW repaired the complication of DM in muscle by showing lower mRNA expression of NF-κB and caspase-3 compared to the diabetes mellitus group.

Keywords: *Chlorogenic acid, diabetes mellitus, atrophy, inflamation, apoptosis, NF-κB, caspase-3.*