ABSTRAK

Adianingsih, Oktavia Rahayu. 2014. **Pengaruh Pemberian Protein *Lectin-like Oxidized LDL Receptor 1* terhadap Kadar Imunoglobulin G Anti-LOX-1 pada *Rattus norvegicus* Wistar dengan Diet Aterogenik.** Tugas Akhir, Fakultas Kedokteran, Universitas Brawijaya. Pembimbing: (1) Valentina Yurina, S.Si., M.Si. (2) dr Maimun Z A, M.Kes, SpPK

Lectin-like oxidized low density lipoprotein receptor-1 (LOX-1) dan *oxidized low density lipoprotein* (OxLDL) berperan dalam perkembangan aterosklerosis. LOX-1, reseptor utama OxLDL pada sel endotel, akan mengalami *upregulasi* pada lesi aterosklerosis. Beberapa studi terbaru menyatakan bahwa LOX-1 merupakan target yang potensial dan menjanjikan untuk pengembangan obat antiaterosklerosis. Penelitian ini didesain untuk mengetahui respons humoral dari imunisasi protein LOX-1 dengan alum sebagai ajuvan, yang ditandai dengan peningkatan kadar IgG anti-LOX-1 pada tikus Wistar dengan diet aterogenik AIN-93M. Analisis *in silico* dilakukan sebagai studi pendahuluan untuk penelitian *in vivo*. Dua puluh delapan tikus Wistar jantan usia 6-8 minggu dibagi menjadi 7 kelompok, yaitu kontrol negatif (tikus dengan diet normal), kontrol positif (tikus dengan diet aterogenik), dan 5 kelompok perlakuan. Tikus pada kelompok perlakuan diberikanpakan diet aterogenik AIN-93M selama 56 hari dan diimunisasi dengan protein LOX-1 pada hari 0, 21 dan 35 dengan dosis yang berbeda (1 ng LOX-1 + alum, 10 ng LOX-1 + alum, 100 ng LOX-1 + alum, 1 µg LOX-1+alum, alum saja). Pada hari ke-57, tikus dieutanasia dan sampel darah diambil untuk diukur kadar IgG anti-LOX-1 serum menggunakan teknik ELISA. Analisis statistik menunjukkan bahwa pemberian protein LOX-1 pada kelompok perlakuan tidak signifikan dalam meningkatkan kadar IgG anti-LOX-1 ($p > 0,05$) dan terdapat kolerasi positif yang lemah antara dosis protein LOX-1 dengan kadar IgG anti-LOX-1 ($p = 0,071$; $r = 0,436$). Kesimpulan penelitian ini adalah bahwa pemberian LOX-1 dengan dosis 1-1000 ng belum cukup adekuat dalam meningkatkan kadar IgG anti-LOX-1 serum secara signifikan pada tikus Wistar dengan diet aterogenik.

Kata Kunci: *Aterosklerosis, diet aterogenik AIN-93M, IgG anti-LOX-1, alum, imunisasi, in silico*

ABSTRACT

Adianingsih, Oktavia Rahayu. 2014. ***Effect of Lectin-like Oxidized LDL Receptor 1 Administration on Anti-LOX-1 Immnunoglobulin G Level in Wistar Rattus norvegicus with Atherogenic Diet.*** Final Assignment, Faculty of Medicine, Brawijaya University. Supervisors: (1) Valentina Yurina, S.Si., M.Si. (2) dr Maimun Z A, M.Kes, SpPK

Lectin-like oxidized low density lipoprotein receptor-1 (LOX-1) and oxidized low density lipoprotein (OxLDL) have been implicated in the development of atherosclerosis. LOX-1, the primary receptor for OxLDL in endothelial cells, is up-regulated in atherosclerotic lesions. Recent studies have shown that LOX-1 might be a potential and promising target for the development of novel antiatherosclerotic drugs. This study was designed to investigate the humoral response of LOX-1 immunization with alum as adjuvant, marked with the increasing of anti-LOX-1 IgG serum levels in Wistar rats with AIN-93M atherogenic diet. In silico analysis was conducted as preliminary in vivo study. Twenty eight male Wistar rats aged 6-8 weeks were divided into 7 groups which were negative control (rats with normal diet), positive control (rats with atherogenic diet), and 5 treatment groups. Rats of treatment groups were fed with atherogenic diet daily for 56 days and were immunized with LOX-1 protein at day 0, 21 and 35 in different doses (1 ng LOX-1 + alum, 10 ng LOX-1 + alum, 100 ng LOX-1 + alum, 1 µg LOX-1 + alum and alum only). On the 57th day, the rats were sacrificed, then blood sample was collected to measure anti-LOX-1 IgG serum levels with ELISA technique. Statistical analysis showed that the administration of LOX-1 protein in the treatment groups was not significant to increase anti-LOX-1 IgG serum levels ($p > 0.05$) and there was a weak positif correlation between LOX-1 immunization doses and anti-LOX-1 IgG serum levels ($p = 0,071$; $r = 0436$). The conclusion of this study is the administration of LOX-1 protein in 1 – 1000 ng dose is inadequate to significantly increase anti-LOX-1 IgG serum levels in Rats with atherogenic diet.

Key words: *Atherosclerosis, AIN-93M atherogenic diet, anti-LOX-1 IgG, alum, immunization, in silico*