ABSTRAK

Zahwa, Soraya Coraima. 2017. **Pemberian *Sclerostin* Dapat Menurunkan Jumlah Makrofag Limpa Tikus Wistar Model Osteoporosis**. Tugas Akhir, Program Studi Pendidikan Dokter, Fakultas Kedokteran Universitas Brawijaya. Pembimbing: (1) dr. Maimun Zulhaidah Arthamin, M.Kes, Sp.PK (2) dr. Cholid Tri Tjahjono, M.Kes, Sp.JP

Pada wanita yang telah mengalami menopouse mengalami penurunan kadar estrogen dalam tubuhnya hingga mengakibatkan menurunnya sistem imun seluler serta apoptosis dari osteoklas. Penurunan densitas tulang menunjukkan adanya penurunan osteoblas, osteosit, serta aktivitas sel seperti makrofag sehingga dapat mempercepat terjadinya osteoporosis. Protein *Sclerostin* akan meningkatkan pembentukan antibodi anti-*sclerostin* sehingga dapat menurunkan jumlah makrofag dalam tubuh. Penelitian ini bertujuan membuktikan bahwa protein *Sclerostin* dapat menurunkan jumlah makrofag limpa pada tikus wistar model hipoestrogen. Penelitian ini menggunakan *true experimental design* secara in vivo dengan rancangan *Randomized Post Test Only Controlled Group Design*. Dalam penelitian ini terdapat 5 kelompok perlakuan, maka jumlah hewan uji untuk masing-masing perlakuan dapat dicari dengan menggunakan rumus $[(np-1) - (p-1)] \geq 16$, dengan n = jumlah pengulangan tiap perlakuan; p = jumlah perlakuan. $(np-1) - (p-1) \geq 16$; $(5n-1) - (5-1) \geq 16$; $n \geq 4,2 \sim 5$ n = 5; p = 5. Randomisasi dengan simple random sampling. Data jumlah makrofag limpa tikus dihitung rerata 20 lapang pandang. Hasil penghitungan jumlah makrofag limpa tikus dianalisa secara statistik menggunakan program *IBM SPSS Statistics 20* signifikansi 0,05 ($p = 0,05$), taraf kepercayaan 95% ($\alpha = 90,05$). Uji yang dilakukan adalah uji normalitas data, uji homogenitas varian, uji *One-way ANOVA, Post hoc test*, dan uji korelasi Pearson. Hasil penelitian menunjukkan pemberian *Sclerostin* dapat menurunkan jumlah makrofag pada limpa tikus wistar model hipoestrogen.

Kata kunci : Sclerostin, makrofag, osteoporosis, tikus model osteoporosis

ABSTRACT

Zahwa, Soraya Coraima. 2017. **The Giving Of Sclerostin May Decrease The Total Macrophages Inside The Spleen Of Osteoporosis Model Wistar Rats**. Final Assignment, Medical Program, Faculty of Medicine, University of Brawijaya. Supervisors: (1) (1) dr. Maimun Zulhaidah Arthamin, M.Kes, Sp.PK (2) dr. Cholid Tri Tjahjono, M.Kes, Sp.JP

Menopause women undergo decreased level of oestrogen causing lowered cellular immune system and apoptosis of osteoclasts. The decline in bone density shows that there is a decrease of osteoblasts, osteocytes, as well as the activity of macrophages resulting the acceleration process of osteoporosis. Sclerostin protein will increase the formation of *anti*-sclerostin antibody, so that it is able to decrease the total of macrophage within the body. The research was aimed to prove that *Sclerostin* protein may decrease the total macrophages inside the spleen of hypo-oestrogen wistar rats model. This study used true experimental design by in vivo using Randomized Post Test Only Controlled Group Design. There were 5 treated groups in this experiment, thus the number of tested animals for each treatment can be found using the formula $[(np-1) - (p-1)] \geq 16$, by n = the number of repetition of each treatment; p = the number of treatment. $(np-1) - (p-1) \geq 16$; $(5n-1) - (5-1) \geq 16$; $n \geq 4,2 \sim 5$ n = 5; p = 5. Randomization using simple random sampling. Data of total macrophages within the spleen was calculated by the average of 20 high field views. The result of the calculation of total rat macrophages was analyzed statistically using IBM SPSS Statistics 20 by significance of 0,05 ($p = 0,05$). Conducted tests were normality test, homogenity test, One-way ANOVA test, Post hoc test, and Pearson Correlation test. The conclusion is *Sclerostin* protein is able to decrease the total macrophages inside the spleen of hypo-oestrogen wistar rats model.

Keywords: Sclerostin, macrophages, osteoporosis, model wistar rats