

Pengaruh pemberian fraksi air dari ekstrak metanol kulit buah delima punica granatum l terhadap jumlah osteoklas dan kadar kalsium tulang pada tikus yang diovariectomi = The effect of water fraction from methanol extract of pomegranate fruit peels punica granatum l to the number of osteoclast and bone calcium levels that ovariectomized ratskulit buah delima mengandung asam elagat yang diduga berpotensi sebagai selectiv

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Abstrak

[<b>ABSTRAK</b><br>

Osteoporosis pada wanita menopause terjadi karena menurunnya hormon estrogen, pada kondisi ini dikaitkan dengan peningkatan resorpsi tulang oleh osteoklas serta penurunan kadar kalsium tulang. Kulit buah delima diketahui mengandung asam elagat yang diduga berpotensi sebagai selective estrogen receptor modulators (SERMs) alami. Tujuan penelitian ini untuk melihat potensi yang terkandung dalam fraksi air dari ekstrak metanol kulit buah delima dalam menurunkan aktivitas osteoklas dan meningkatkan kadar kalsium tulang. Metode ekstraksi menggunakan pelarut metanol dilanjutkan dengan fraksinasi bertingkat yang dimulai dari pelarut n-heksan, etil asetat kemudian air. Studi eksperimental dengan rancangan acak lengkap in vivo pada tikus betina (Sprague-Dawley) sebanyak 42 tikus yang dibagi secara acak kedalam 7 kelompok terdiri dari: sham; OVX; ES (OVX+estradiol 0,1 mg/kg BB, p.o); TAM (OVX+tamoxifen 10 mg/kg BB, p.o); PI (OVX+fraksi air kulit buah delima 50 mg/kg BB, p.o); PII (OVX+ fraksi air kulit buah delima 100 mg/kg BB, p.o); PIII (OVX+ fraksi air kulit buah delima 200 mg/kg BB, p.o). Perlakuan dilakukan setiap hari selama 28 hari. Hasil penelitian yang diperoleh bila dibandingkan dengan kelompok OVX, kelompok PIII (2,55 ± 0,70) memiliki jumlah sel osteoklas yang lebih rendah dibandingkan OVX (10,45 ± 1,55), sedangkan pada kadar kalsium tulang pemberian dosis 200 mg/kg BB pada kelompok PIII juga mengalami peningkatan sebesar 2005,96 ± 404,91 bila dibandingkan dengan OVX yang memiliki kadar kalsium tulang sebesar 1277,69 ± 322,59. Kesimpulan yang diperoleh adalah pemberian fraksi air kulit buah delima pada dosis 200 mg/kg BB mampu menurunkan jumlah sel osteoklas dan meningkatkan kadar kalsium tulang pada pada tikus yang diovariectomi.

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<b>ABSTRACT</b><br>

Osteoporosis in postmenopausal women occurs because of decreased estrogen, This condition is due to the increasment of bone resorption by osteoclasts and the decreasment of bone calcium levels. Pomegranate peel consist of ellagic acid which potentially work as a natural SERMs. The purpose of this study is to investigate the potential contained in the water fraction of the methanol extract of pomegranate peel in reducing the number of osteoclasts and increasing the bone calcium levels. The extraction method was conducted using methanol solvent followed by fractionation terraced that is began from solvent n-hexane, ethyl acetate and then methanol. The number of rats female samples in this experimental studies in vivo (Sprague-Dawley) were 42 rats, which is divided into 7 groups induced by ovariectomy (OVX) except the sham group. The group consists of sham; OVX; ES (OVX + estradiol 0.1 mg / kg, body weight p.o); TAM (OVX + tamoxifen

10 mg / kg, body weight p.o); PI (OVX + water fraction of pomegranate peel 50 mg / kg, body weight p.o); PII (OVX + water fraction of pomegranate peel 100 mg / kg, body weight p.o); PIII (OVX + water fraction of pomegranate peel 200 mg / kg, body weight p.o). The treatment is done every day for 28 days. The results of the PIII group is  $2,55 \pm 0,70$  which is lower than the OVX group ( $10,45 \pm 1,55$ ), whereas in bone calcium levels, dosage of 200 mg / kg body weight in PIII group showing an increase of  $2005.96 \pm 404.91$  compared to OVX the bone calcium levels by  $1277.69 \pm 322.59$ . The conclusion is water fraction of pomegranate peel application at a dose of 200 mg / kg body weight able to reduce the num;Osteoporosis in postmenopausal women occurs because of decreased estrogen, This condition is due to the increasment of bone resorption by osteoclasts and the decreasment of bone calcium levels. Pomegranate peel consist of ellagic acid which potentially work as a natural SERMs. The purpose of this study is to investigate the potential contained in the water fraction of the methanol extract of pomegranate peel in reducing the number of osteoclasts and increasing the bone calcium levels. The extraction method was conducted using methanol solvent followed by fractionation terraced that is began from solvent n-hexane, ethyl acetate and then methanol. The number of rats female samples in this experimental studies in vivo (Sprague-Dawley) were 42 rats, which is divided into 7 groups induced by ovariectomy (OVX) except the sham group. The group consists of sham; OVX; ES (OVX + estradiol 0.1 mg / kg, body weight p.o); TAM (OVX + tamoxifen 10 mg / kg, body weight p.o); PI (OVX + water fraction of pomegranate peel 50 mg / kg, body weight p.o); PII (OVX + water fraction of pomegranate peel 100 mg / kg, body weight p.o); PIII (OVX + water fraction of pomegranate peel 200 mg / kg, body weight p.o). The treatment is done every day for 28 days. The results of the PIII group is  $2,55 \pm 0,70$  which is lower than the OVX group ( $10,45 \pm 1,55$ ), whereas in bone calcium levels, dosage of 200 mg / kg body weight in PIII group showing an increase of  $2005.96 \pm 404.91$  compared to OVX the bone calcium levels by  $1277.69 \pm 322.59$ . The conclusion is water fraction of pomegranate peel application at a dose of 200 mg / kg body weight able to reduce the num, Osteoporosis in postmenopausal women occurs because of decreased estrogen, This condition is due to the increasment of bone resorption by osteoclasts and the decreasment of bone calcium levels. Pomegranate peel consist of ellagic acid which potentially work as a natural SERMs. The purpose of this study is to investigate the potential contained in the water fraction of the methanol extract of pomegranate peel in reducing the number of osteoclasts and increasing the bone calcium levels. The extraction method was conducted using methanol solvent followed by fractionation terraced that is began from solvent n-hexane, ethyl acetate and then methanol. The number of rats female samples in this experimental studies in vivo (Sprague-Dawley) were 42 rats, which is divided into 7 groups induced by ovariectomy (OVX) except the sham group. The group consists of sham; OVX; ES (OVX + estradiol 0.1 mg / kg, body weight p.o); TAM (OVX + tamoxifen 10 mg / kg, body weight p.o); PI (OVX + water fraction of pomegranate peel 50 mg / kg, body weight p.o); PII (OVX + water fraction of pomegranate peel 100 mg / kg, body weight p.o); PIII (OVX + water fraction of pomegranate peel 200 mg / kg, body weight p.o). The treatment is done every day for 28 days. The results of the PIII group is  $2,55 \pm 0,70$  which is lower than the OVX group ( $10,45 \pm 1,55$ ), whereas in bone calcium levels, dosage of 200 mg / kg body weight in PIII group showing an increase of  $2005.96 \pm 404.91$  compared to OVX the bone calcium levels by  $1277.69 \pm 322.59$ . The conclusion is water fraction of pomegranate peel application at a dose of 200 mg / kg body weight able to reduce the num]