

INTISARI

Tulang merupakan jaringan dinamis yang terus dipertahankan dan diperbarui. Proses pembentukan tulang baru oleh osteoblas disebut osteogenesis. Biji pepaya mengandung flavonoid yang dapat meningkatkan jumlah osteoblas dengan cara meningkatkan regulasi dari *Bone Morphogenic Protein* (BMP). Tujuan penelitian ini adalah untuk mengetahui pengaruh ekstrak biji pepaya terhadap viabilitas sel osteoblas pada osteogenesis.

Ekstrak biji pepaya didapatkan dari proses ekstraksi dan maserasi, diencerkan dengan metode serial dilusi menjadi konsentrasi 1,25%, 2,5%, 5%, 10%, dan 20%. Kultur osteoblas dibagi ke dalam *microplate* dengan masing-masing sumuran terdapat 2×10^4 sel/100 μ L kemudian diberi perlakuan yaitu ekstrak biji pepaya konsentrasi 1,25%, 2,5%, 5%, 10%, dan 20%. Data diperoleh dengan menghitung *optical density* (OD) menggunakan ELISA *plate reader*.

Hasil penelitian didapatkan persentase viabilitas osteoblas lebih dari 100% pada semua konsentrasi ekstrak biji pepaya. Uji *One Way ANOVA* menunjukkan bahwa terdapat pengaruh ekstrak biji pepaya terhadap viabilitas osteoblas. Uji *Post Hoc LSD* menunjukkan bahwa ekstrak biji pepaya dengan konsentrasi 1,25% lebih baik dari konsentrasi 2,5%, 5%, 10%, dan 20% dalam meningkatkan viabilitas osteoblas. Kesimpulan dari penelitian ini yaitu terdapat pengaruh ekstrak biji pepaya terhadap viabilitas osteoblas pada osteogenesis dan semakin rendah konsentrasi ekstrak biji pepaya maka viabilitas osteoblas semakin besar.

Kata Kunci: viabilitas, osteoblas, osteogenesis, dan ekstrak biji pepaya

ABSTRACT

Bone is a dynamic tissue that is continuously maintained and renewed. The process of new bone formation by osteoblasts called osteogenesis. Papaya seeds contain flavonoids that can increase the number of osteoblasts by increasing regulation of Bone morphogenic protein (BMP). The purpose of this study was to determine the effects of extracts of papaya seeds on the viability of osteoblasts in osteogenesis.

Papaya seed extract were obtained from the extraction process with maceration method, diluted by serial dilution method to 1.25%, 2.5%, 5%, 10% and 20% of extract concentration. Osteoblast culture was divided into each microplate contained 2×10^4 cells/100 μ L and added with papaya seed extract with various concentration 1.25%, 2.5%, 5%, 10% and 20%. The data were obtained by measuring the optical density (OD) using ELISA plate reader.

The result of this research showed the percentage of osteoblast viability more than 100% in all concentrations of papaya seeds extract. One Way ANOVA result showed that there was an effects from extracts of papaya seeds on the viability of osteoblasts. Post Hoc LSD showed that the extract of papaya seeds with a concentration of 1.25% better than concentration of 2,5%, 5%, 10%, and 20% in increase the viability of osteoblasts. The conclusion of this research that there was effects of extracts of papaya seeds on the viability of osteoblasts in osteogenesis and the lower the concentration of the papaya seed extract greater osteoblast viability.

Keywords: viability, osteoblasts, osteogenesis, and papaya seed extract