

INTISARI

PENGARUH KONSENTRASI ION DOPING Zn^{2+} TERHADAP UKURAN KRISTAL DAN VIABILITAS SEL PADA *SCAFFOLD* BIOKERAMIK DENGAN BAHAN *CARBONATE HYDROXYAPATITE* (CHA) BERBASIS *HONEYCOMB* (HCB) UNTUK REGENERASI TULANG

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Pada penelitian ini telah berhasil dilakukan fabrikasi *scaffold* biokeramik dengan Bahan *Carbonate Hydroxyapatite* (CHA) Berbasis *Honeycomb* (HCB) dengan metode *porogen leaching* dan doping ion Zn^{2+} ke dalam *scaffold* menggunakan metode *ion exchange*. Fabrikasi *scaffold* tersebut dibuat dengan variasi konsentrasi ion Zn^{2+} sebesar 0,01 M, 0,02 M, 0,03 M, dan 0,04 M. *Scaffold* kemudian dikarakterisasi menggunakan XRD, FTIR, dan SEM. Hasil perbandingan dengan sampel kontrol menunjukkan penambahan ion Zn^{2+} pada *scaffold* menyebabkan peningkatan ukuran kristal dan penurunan *microstrain*. Namun penambahan ion Zn^{2+} tidak menyebabkan perubahan struktur kristal dan sampel masih berupa CHA tipe-B. Ukuran pori yang terbentuk pada *scaffold* cenderung lebih kecil dan porositas meningkat akibat penambahan ion Zn^{2+} . Pada *scaffold* tersebut juga dilakukan uji viabilitas sel menggunakan uji MTT dan diperoleh nilai viabilitas sel *scaffold* menurun akibat penambahan ion Zn^{2+} .

Kata Kunci: *Carbonate Hydroxyapatite*, ion Zn^{2+} , *scaffold*, viabilitas sel

ABSTRACT

EFFECT OF Zn^{2+} DOPING ION CONCENTRATION AGAINST CRYTAL SIZE AND CELL VIABILITY ON BIO CERAMIC SCAFFOLD WITH CARBONATE HYDROXYAPATITE (CHA) BASED HONEYCOMB (HCB) SCAFFOLD FOR BONE REGENERATION

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In this research, the fabrication of bioceramic scaffold with carbonate hydroxyapatite (CHA) based honeycomb (HCB) scaffold has been successfully carried out using the porogen leaching method and doping Zn^{2+} ions into the scaffold using the ion exchange method. The scaffold fabrication was made with variation in the concentration of Zn^{2+} ions of 0,01 M, 0,02 M, 0,03 M, and 0,04 M. The scaffold was then characterization using XRD, FTIR, and SEM. The result of the comparison with the control sample showed that the addition of Zn^{2+} ions to the scaffold caused an increase in crystal size and a decrease in microstrain. However, the addition of Zn^{2+} ions did not change the crystal structure and sample was still in the form of B-type CHA. The pore size formed on the scaffold tends to be smaller and the porosity increase due to the addition of Zn^{2+} ions. The cell viability test was also carried out on the scaffold using MTT test and it was found that the cell viability value of the scaffold decrease due to the addition of Zn^{2+} ions.

Keyword: Carbonate Hydroxyapatite, ion Zn^{2+} , scaffold, cell viability