

Pengaruh waktu sintering terhadap kemurnian kristal hidroksiapatit pada metode hidrotermal = Effect of sintering time on hydroxyapatite crystal s purity with hydrothermal method

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Abstrak

[ABSTRAK

Hidroksiapatit merupakan jenis biomaterial sintesis yang mempunyai fasa yang paling stabil dibandingkan dengan senyawa kalsium fosfat lainnya, selain itu hidroksiapatit memiliki tingkat kemiripan yang tinggi dengan tulang, sehingga hidroksiapatit banyak diaplikasikan sebagai bone graft sintesis. Tujuan dari penelitian ini adalah untuk mengetahui pengaruh waktu sintering terhadap kemurnian kristal hidroksiapatit yang dihasilkan. Hidroksiapatit dari prekursor kimia CaCO_3 dan $(\text{NH}_4)_2\text{HPO}_4$ disintesis dengan menggunakan metode hidrotermal pada temperatur 150oC dan 300oC. Hasil dari sintesis hidroksiapatit dikarakterisasi dengan menggunakan X-Ray Diffraction (XRD), Scanning Electron Microscopy (SEM), dan Energy Dispersive Analysis X-Ray (EDX). Hasil karakterisasi XRD memperlihatkan intensitas tertinggi rata-rata berada pada sudut 2θ ; yaitu, 25.898o, 31.789o, 32.216o, 32.922o, 46.729o, dan 49.524o. Hasil dari SEM memperlihatkan morfologi dari sampel bebrbetuk nanoroot dan hasil dari EDX menunjukkan rasio Ca/P sebesar 1.8.

ABSTRACT

Hydroxyapatite is the most phase-stable syntetic biomaterial compared to another calcium phosphate material. Hydroxyapatite also has high similarity with bone which make it has wide application as syntetic bone graft. Purpose of this research is to study the effect of sintering time towards hydroxyapatite crystal's purity. Hydroxyapatite made from chemical precursor CaCO_3 and $(\text{NH}_4)_2\text{HPO}_4$ was synthesized using hydrothermal method on 150oC and 300oC. Synthesized hydroxyapatite was characterized using X-Ray Diffraction (XRD), Scanning Electron Microscopy (SEM), and Energy Dispersive Analysis X-Ray (EDX). The result of characterization showed that highest average intensity on 2θ ; were: 25.898o, 31.789o, 32.216o, 32.922o, 46.729o, and 49.524o.;Hydroxyapatite is the most phase-stable syntetic biomaterial compared to another calcium phosphate material. Hydroxyapatite also has high similarity with bone which make it has wide application as syntetic bone graft. Purpose of this research is to study the effect of sintering time towards hydroxyapatite crystal's purity. Hydroxyapatite made from chemical precursor CaCO_3 and $(\text{NH}_4)_2\text{HPO}_4$ was synthesized using hydrothermal method on 150oC and 300oC. Synthesized hydroxyapatite was characterized using X-Ray Diffraction (XRD), Scanning Electron Microscopy (SEM), and Energy Dispersive Analysis X-Ray (EDX). The result of characterization showed that highest average intensity on 2θ ; were: 25.898o, 31.789o, 32.216o, 32.922o, 46.729o, and 49.524o.;Hydroxyapatite is the most phase-stable syntetic biomaterial compared to another calcium phosphate material. Hydroxyapatite also has high similarity with bone which make it has wide application as syntetic bone graft. Purpose of this research is to study the effect of sintering time towards hydroxyapatite crystal's purity. Hydroxyapatite made from chemical precursor CaCO_3 and $(\text{NH}_4)_2\text{HPO}_4$ was synthesized using hydrothermal method on 150oC and 300oC. Synthesized hydroxyapatite was characterized using X-Ray Diffraction (XRD), Scanning Electron Microscopy (SEM), and Energy Dispersive Analysis X-Ray (EDX). The result of characterization

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