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티타늄 치환 수산화아파타이트의 합성 및 특성

Synthesis and Characterization of Ti-Substituted Hydroxyapatite

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Titanium은 생체조직과 반응하지 않는 bioinert한 물질로 titanium alloy는 bone implant로 많이 쓰여지고 있다 특히 관절 부분에 쓰이는 titanium alloy implant는 생체친화성을 보안하기 위해 세라믹 코팅을 하고 있으며, 세라믹 코팅재 중에서도 hydroxyapatite는 생체뼈와 같은 성분이라는 점에서 코팅재로서의 관심이 높아지고 있다.

본 연구에서는 Hydroxyapatite에 titanium이 존재한다면 titanium alloy와 hydroxyapatite 코팅면사이의 결합을 강화시킬 수 있을 것으로 기대하여, titanium substituted hydroxyapatite 합성을 시도하였다 Titanium source로는 킬레이트 리간드로 Ti-ion을 안정화시키고 습식법으로 Titanium substituted hydroxyapatite를 합성하였다 Titanium의 함량과 열처리 온도를 변화시켜 보았으며, titanium의 치환여부를 확인하기 위해서 XRD, EDS, TEM을 이용하여 분석 하였다

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Rheological Properties of α-TCP System Bone Cement

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Calcium phosphate bone cements have attracted great attention in medicine and dentistry due to their excellent biocompatibility and bone-repair properties It was investigated physical properties (setting time, viscosity and compressive strength etc) when dispersion materials (polycarbonic acid, chondroitin and sodium dodecyl sulfate) were added at α-TCP system bone cement α-tricalcium phosphate and tetracalcium phosphate were prepared by heating a mixture of calcium hydrogen phosphate and calcium carbonate at 1500°C for 6 hr in furnace, followed by quenching at room temperature The cement was composed of a mixture of α-Tricalcium Phosphate(α-TCP), Tetracalcium Phosphate(TeCP) and Dicalcium Phosphate Dihydrate(DCPD) and a liquid phase containing $NH_4H_2PO_4$ and citric acid The hydration reaction was performed to 1, 3 and 7 days in simulated body fluid at 37°C After hardened samples of Φ6×H12 (mm) were used for compressive strength test Also it measured the setting time and the viscosity