

P016 Ultra-thin coating of calcium phosphate apatite crystals
Jong-Soon Kim, Jea Seung Ko and Hyun-Man Kim
*Laboratory for the Study of Molecular Biointerfaces,
School of Dentistry and BK21CLS, Seoul National
University, 28-22, YeonKun-Dong, ChongRo-Ku, Seoul
110-749, Korea*

Calcium phosphate apatite (CPA) has been used to coat biomaterials to enhance biocompatibility. However, fracture of the interface between CPA and biomaterials was reported when the biomaterials were implanted into bone. Biomaterials such as dental implant became loose as a result of detachment from the bone tissue due to a failure of Osseo integration. This study was performed to obtain a CPA crystal coating in nano-scaled thickness. Calcium and phosphate ion solution, 2.5mM (Ca/P = 1), prepared in ice-cold temperature was poured into hydrophobic polystyrene dishes. Then the dishes containing cold ion solution were put in an isothermal oven set at 37°C for 25 min. Granules of amorphous calcium phosphate (ACP) were deposited on the polystyrene dishes. After briefly washing with distilled water, surface deposited with ACP was exposed to the calcium phosphate ion solution at lower concentration than the first solution. With this second treatment, soluble portion of ACP granules was dissolved, while matured insoluble portion of/around ACP granules remained as CPA crystals of which phase was confirmed by electron diffraction. These crystals multiplied to fill the remaining surface in the third treatment with an ion solution of medium concentration. Thickness of coating was quite less than 50 nm, the height of ACP hemisphere. These results indicate that biomaterials can be coated with CPA crystals in ultra-thin thickness, which may solve the existing problems of CPA coating.