Development of surface modification method for the improvement of biocompatibility of bone substitutes

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As the population of the elderly is greatly increased thanks to the advances in modern biotechnology, bone-related diseases became one of the most critical problems to be solved. The aim of the current study was to develop an efficient surface modification method to improve biocompatibility of bone substitutes. We prepared bisphosphonate-loaded poly(caprolactone)/chitosan hybrid films. The biological functionality of the film was examined for osteoblast proliferation, differentiation and target gene and protein expression patterns using CCK-8 and reverse transcription polymerase chain reaction (RT-PCR) in addition to western blotting. The result elucidated that the prepared film can strongly influence the cellular responses and can be utilized further in surface modification of bone substitutes.