The effect of silk scaffold contained with hydroxyapatite

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In this study we tried to make a silk scaffold contained nano-HAp for dental tissue engineering. The silk scaffolds extracted sericin were coated with 0.3g, 0.15g, 0.03g of nano-HAp dissolved in PBS. Then, they were soaked in a 1% type I atelocollagen solution and air dried. They were crosslinked with 0.02% carbodiimide and lyophilized for 48 h. And they were sterilized by ɣ- irradiation at 10 KGy. DPSCs were seeded into silk scaffolds contained nano-HAp at a density of 2.8 104 cells/cm2 and cultured for 3weeks in growth medium. Then, they were cultured for 4weeks in differentiation medium and were transplanted in the nude mouse. The biopsy was processed at 8weeks. Col Ⅲ and fibronectin, osteocalcin, osteopontin, osteonectin, osteoprotegerin and BMP-2 levels in the culture were greatest in the 0.15g of HAp. The calcification and the revelation of ostecalcin and osteopontin were better made in the silk scaffold contained 15mg of nano-HAp. We could make silk scaffold contained various concentration of nano-HAp. Among them, 15mg of nano-HAp was the most effective for osteogenesis. It will be a suitable substrate as biomaterial for bone tissue .