Cell delivery of human osteoblast stem cells using injectable pH and temperature sensitive biodegradable block copolymer hydrogels

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Stimuli-sensitive hydrogels have attracted considerable attention as intelligent materials in the biochemical and biomedical fields. Especially, injectable pH and temperature sensitive hydrogels may be easy to inject into body. The synthesis of temperature sensitive block copolymer was performed through a ring-opening polymerization of D,L-lactide, ε-caprolactone. PEG was used as a initiator. The oligo-sulfamethaizne(OSM) was coupled with the end of the block copolymer to show the pH sensitivity of temperature sensitive block copolymer. Human osteoblast stem cells had adhered and multiplied on pH and temperature sensitive hydrogels in vitro. Cells were mixed with pH and temperature sensitive hydrogels and subcutaneously injected into the backs of mice in vivo. They were investigated by optocal microscope after 1week, 2weeks, 4weeks and 6weeks, respectively.