

Application of the Bioactive Self-Assembling Peptide Hydrogels for Tissue Regeneration

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We developed bioactive self-assembling peptide hydrogel which could recruit mesenchymal stem cells. To investigate the inducible ability for stem cells of peptide hydrogels, we implanted them into subcutaneous of nude mice. And then, we injected NIR-labeled hMSCs into tail vein. The migration of injected cells was tracked using multi spectrum imaging system in real time. By applying these bioactive peptide hydrogels for ischemic hind limb models and osteoarthritis models, the abilities of stem cell recruitment and treatment effects were evaluated. In the peptide hydrogels group, it was shown that many mesenchymal stem cells were recruited into injected sites compared to other groups. In the case of osteoarthritis model, it was shown that articular cartilage of the peptide hydrogels group has smooth surface and regenerated cartilage tissue. In conclusion, the bioactive self-assembling peptide hydrogels is effective to recruit mesenchymal stem cells and that leads to regenerate tissues.