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Icariin conjugated hyaluronic acid/collagen hydrogel for osteocondral interface restoration

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Abstract

Over the past decades, numerous tissue-engineered constructs have been investigated for the osteochondral repair. However, it still remains a challenge to regenerate the functionalized calcified layer. In this study, the potential of icariin (Ica) conjugated hyaluronic acid/collagen (Ica-HA/Col) hydrogel to promote the osteochondral interface restoration was investigated. Compared with HA/Col hydrogel, Ica-HA/Col hydrogel simultaneously facilitated chondrogenesis and osteogenesis *in vitro*. The cells encapsulated in Ica-HA/Col hydrogel tended to aggregate into bigger clusters. The chondrogenic genes' expression level was remarkably up-regulated, and the matrix synthesis of sGAG and type II collagen was significantly enhanced. Similarly, the osteogenic genes, including RUNX2, ALP, and OCN were also up-regulated at early stage. Consequently, more calcium deposition

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