**(P 59) Carrageenan-Based Hydrogels As Potential Systems for the Delivery of PDGF in Bone Tissue Regeneration Strategies**

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One of the major drawbacks found in most bone tissue engineering (TE) approaches developed so far consists in the lack of strategies to promote vascularization. Some studies have addressed different issues that may enhance vascularization in TE constructs, most of them involving the use of growth factors that are involved in the restitution of the vascularity in a damaged zone. The use of sustained delivery systems might also play an important role in the re-establishment of angiogenesis. In this study, κ-carrageenan, a natural polymer was used to develop hydrogel beads with the ability to incorporate growth factors with the purpose of establishing an effective angiogenesis mechanism. Some processing parameters were studied and their influence on the final beads properties was evaluated. A model protein—ovalbumin (OVA)—was encapsulated in the beads to optimize the procedure before using the growth factor of interest, i.e., the Platelet Derived Growth Factor (PDGF), selected as the angiogenic factor. The results demonstrate that the developed system is mild and adequate for protein incorporation and that an efficient encapsulation and protein loading were achieved, as well as release profiles matching those usually described for a typical hydrogel behaviour. Moreover, carrageenan shows a huge potential for application in the biomedical field, namely in the development of injectable systems, due to its gelling abilities. In general, the obtained results demonstrate the potential of this system for bone TE applications.

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