



Effects of FGF-2 release from a hydrogel polymer on bone mass and microarchitecture

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Résumé en anglais	<p>Bone substitutes are widely used for filling and restoring bone defects. Among them, methacrylic polymers are employed in load-bearing bones to seal hip prostheses. Incorporation of growth factors into a polymer device could be a way to enhance bone growth. In the present study, we evaluated the capacity of poly(2-hydroxyethyl methacrylate) - pHEMA - copolymerized with 2-vinyl pyrrolidone - VP - to release proteins. Fibroblast growth factor-2 (FGF-2) was incorporated into cylinders of p(HEMA-co-VP). FGF-2 release was studied by ELISA in vitro and cylinders were implanted in the femoral condyle of white New Zealand rabbits. After 2 months post-surgery, FGF-2 was able to enhance bone formation by increasing bone volume; this effect was evidenced by an increase in trabecular number and bone gain was mainly in the form of woven bone. At 3 months post-surgery, no difference could be evidenced between animals receiving vehicle or FGF-2. Animals receiving vehicle exhibited bone mass higher than at 2 months and woven bone was replaced by mature bone with a lamellar matrix. The hydrogel polymer allowed the release of FGF-2, which in return enhanced bone regeneration soon after surgery but the effect vanished rapidly.</p>
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Liens

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