

Chemical structure of methylmethacrylate-2-[2',3',5'-triiodobenzoyl]oxoethyl methacrylate copolymer, radio-opacity, in vitro and in vivo biocompatibility

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R�sum� en anglais	<p>The properties of copolymers (physical, chemical, biocompatibility, etc.) depend on their chemical structure and microstructural characteristics. We have prepared radio-opaque polymers based on the copolymers of methyl methacrylate (MMA) and 2-[2',3',5'-triiodobenzoyl]oxoethyl methacrylate (TIBOM). The copolymerization reaction between TIBOM and MMA showed that the reactivity ratios were $r_1 = 0.00029$ and $r_2 = 1.2146$. The composition diagram is typical for a practically non-homopolymerizable monomer (TIBOM) and a very reactive monomer (MMA). The copolymers were analyzed on an X-ray microcomputed tomograph and they proved to be radio-opaque even at low concentrations of TIBOM. The biocompatibility was tested both in vitro (with J774.2 macrophage and SaOS-2 osteoblast like cells) and in vivo in the rat. These materials were found to be non-toxic and were well tolerated by the organism. These combined results led to the suggestion that this type of polymer could be used as dental or bone cements in place of barium or zirconium particles, which are usually added to provide X-ray opacity.</p>
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