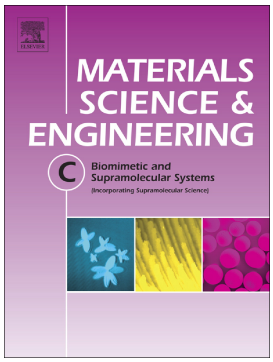

Chlorambucil loaded in mesoporous polymeric microspheres as oral sustained release formulations with enhanced hydrolytic stability

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Chlorambucil loaded in mesoporous polymeric microspheres as oral sustained release formulations with enhanced hydrolytic stability

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Abstract: Chlorambucil, a chemotherapeutic agent, is usually administered orally to treat chronic lymphocytic leukemia and some other types of cancers in regimens of conventional and metronomic chemotherapies. However, the hydrolytic instability of chlorambucil is a major limitation in achieving the optimum therapeutic performance. In this work, mesoporous polymeric microspheres were prepared by free radical suspension copolymerization of methyl acrylate and divinylbenzene in the presence of porogen. Chlorambucil was loaded into the mesoporous polymeric microspheres through adsorption of the drug in aqueous media with high loading capacity up to more than 350 mg/g. Chlorambucil-loaded mesoporous polymeric microspheres showed sustained release property in media simulating gastrointestinal fluids, with nearly zero order release kinetics. Furthermore, the mesoporous polymeric microspheres as carriers greatly stabilized chlorambucil against its hydrolysis. The