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Biodegradable injectable in situ depot-forming PLGA for controlled release of paclitaxel

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The purpose of this study is to develop Cremophor® EL-free in situ depot forming loaded with paclitaxel (PTX), able to improve the therapeutic index of the drug and devoid of the adverse effects of Cremophor® EL. Injectable in situ-forming implant have received considerable attention as localized drug delivery systems. Here, we examined a poly-(DL-lactic-co- glycolic) acid (PLGA) as an injectable drug depot for paclitaxel (Ptx). *In vitro* experiments showed that Ptx was released from PLGA over the course of more than 30 days. The release profile shows a slow diffusion-controlled phase, followed by a more rapid degradation-controlled region. Two semi-empirical mathematical models (Power law and Peppas) were applied to drug release data in order to elucidate release mechanisms and kinetics. In order to confirm the results of drug profile release, study of the polymer degradation process for the direct determination of the monomer(s): lactic acid (LA) and glycolic acid (GA) with a new HPLC method is proposed.