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Drug Binding and Releasing Characteristics of DNA/Lipid/PLGA Film

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Abstract:
We evaluated the blended compound of DNA/lipid complexes and PLGA (poly(D,L-lactide-co-glycolide)) as a carrier material for drug delivery system (DDS). Transparent, self-standing DNA/lipid/PLGA films were prepared by casting from an organic solvent such as DMSO/chloroform. Daunorubicin hydrochloride (DH) could intercalate and groove bind into DNA in the films, whereby the amount of DH bound to the films was controlled by the latter's immersion period in DH aqueous solution. DH was released from DH films after immersion in PBS solution, whereby release rate was dependent on the chemical structure of lipids. Released DH caused reduction of cell viability during the cell culture of L929 mouse fibroblasts. These results suggested that DNA/lipid/PLGA film was a promising useful material for DDS.

Key words:
Intercalation, DDS, DNA/lipid/PLGA film

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