Delivery of cytarabine by pegylated liposomes for efficient, long-term anticancer effects

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Abstract

The cytosine arabinoside cytarabine is an effective marine-derived antineoplastic agent for the treatment of acute myelogrnous and lymphocytic leukemias. As this nucleoside antimetabolite is an S-phase-specific drug, prolonged exposure of cells to toxic concentrations is critical to achieve maximum biological effect. The activity of cytarabine is nevertheless decreased by its rapid deamination to the biologically inactive metabolite uracil arabinoside. This rapid degradation process is the reason for the ongoing search for efficient formulations and derivatives of cytarabine that cannot be deaminated and exhibited better pharmacokinetic parameters. In the present study, pegylated liposomes were modified for intended prolonged delivery of cytarabine and tested for improved cytotoxic and cytostatic effect in different human cancer lines.