

ENCAPSULATION OF A NEW ANTITUMORAL FLUORESCENT 6-(BENZO[d]THIAZO-2-YLAMINO)THIENO[3,2-b]PYRIDINE DERIVATIVE IN NANOLIPOSOMES

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Nanoliposomes are new technological developments for the encapsulation and delivery of bioactive agents. Incorporation of antitumoral drugs in nanoliposomes has been used to overcome some pharmacological disadvantages, like drug toxicity or diminish circulation time of the drug due to rapid elimination, having the advantage of being biocompatible and biodegradable [1,2].

In this work, a potential antitumoral fluorescent compound, methyl 3-amino-6-(benzo[d]thiazol-2-ylamino)thieno[3,2-b]pyridine-2-carboxylate **1** [3] (Fig. 1), was evaluated for the *in vitro* cell growth inhibition on three human tumor cell lines, A375-C5 (melanoma), MCF-7 (breast adenocarcinoma) and NCI-H460 (non-small cell lung cancer), after a continuous exposure of 48 h, exhibiting low GI₅₀ values for all the cell lines tested (3.5-6.4 μM).

Nanoliposomes were prepared by injection of an ethanolic solution of the different lipid mixtures in aqueous media under vigorous stirring, above the melting transition temperature of the lipids, followed by six extrusion cycles. Several lipid formulations were tested including phosphatidylcholines, DSPE-PEG and phosphatidylglycerol at different ratios, with or without cholesterol.

Dynamic light scattering (DLS) measurements indicated that the nanoliposomes with the incorporated compound are generally monodisperse and with diameters between 60 nm and 120 nm.

Compound **1** exhibits fluorescence in non-polar media, while no emission is observed in protic solvents (like ethanol and water). It also shows significant fluorescence emission when incorporated in nanoliposomes, indicating that it can be transported in the hydrophobic region of the lipid bilayer. These results may be important for future drug delivery applications of this potential antitumoral compound using nanoliposomes as drug carriers.

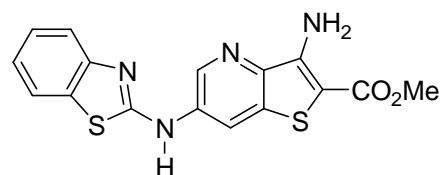


Figure 1 - Structure of compound 1

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