

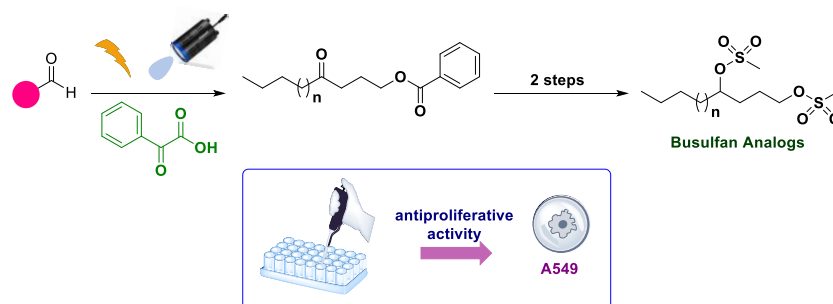
PHOTOCHEMICAL SYNTHESIS OF 1,4-DIOLS AND LIPIDIC ANALOGS OF BUSULFAN AND STUDY OF THEIR ANTIPROLIFERATIVE ACTIVITY

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Synthetic photochemistry is an alternative green and sustainable approach, offering the possibility for the discovery of novel reactivities. Many photochemical reactions are unique, because provide access to products which are not accessible by conventional methods. In the field of the discovery of bioactive compounds and drug synthesis, the development of such methods is of great importance. In the present work, we demonstrate the light-mediated synthesis of lipidic 1,4-diols, which are precursors of busulfan analogs. A green, metal-free photochemical approach was used as the key synthetic step to couple aldehydes with allyl benzoate, followed by treatment with NaBH₄ under reflux to provide long-chain 1,4-diols in high yields, which were easily converted to busulfan analogs by treatment with methanesulfonyl chloride. The photochemical hydroacylation reaction uses phenylglyoxylic acid as the photoinitiator, under LED 370 nm irradiation, and water as the solvent. Busulfan has been one of the drugs of choice in the treatment of chronic myeloid leukemia for decades. The synthesized compounds were studied for their antiproliferative activity on A549 cells. Among the lipidic busulfan analogs, the one carrying a tetradecyl chain exhibited the most interesting activity, highlighting the role of the lipophilicity.



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