

HYDROPHYLIC 3-CARBORANYL THYMIDINE ANALOGUES (3CTAS) FOR BORON NEUTRON CAPTURE THERAPY (BNCT)

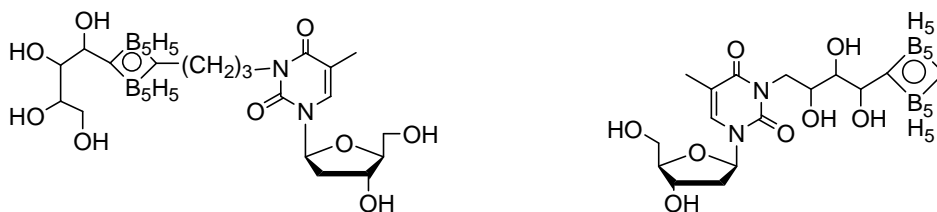
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Boron Neutron Capture Therapy (BNCT) is a binary system for the treatment of cancer. In order for this therapy to be effective, the targeted cancer cells must attain a sufficient concentration of boron-10 and, thus, delivery systems for this non-radioactive isotope have to be developed that selectively target tumor cells. Boronated nucleosides have been considered as very attractive BNCT agents because of their potential metabolic properties, which could result in their selective accumulation and retention in tumor cells. Previously, we have synthesized¹ various types of 3-carboranyl substituted thymidine analogues (3CTAs), which have the potential to fulfil the basic requirements as boron delivery agents for BNCT. Here, we describe concise synthetic methods for the synthesis of novel 3CTAs hydrophilically-enhanced either with additional nucleoside moieties or cyclic and acyclic alcohol functions. NMR and MS spectroscopy confirmed the structures of all synthesized compounds. TK1 substrate characteristics of all new 3CTAs were determined in enzyme assays using recombinant TK1 preparations. Results of this preliminary biological evaluation indicated that some of the novel 3CTAs might have similar or even superior potential as BNCT agents than 3CTAs previously reported.



1. Byun. et al. *Anti-Cancer Agents in Medicinal Chemistry* (2006), 6, 127-144.

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