NEW CARBORANE CONTAINING PORPHYRINS AS POTENTIAL BNCT AND PDT AGENTS

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Boron neutron capture therapy (BNCT) [1] is a binary approach to cancer treatment, relying on the combination of a boron-containing drug and irradiation with thermal neutrons. Most BNCT agents are based on ortho-carborane,[2] which is a biologically stable polyhedral heteroborane with high boron content, that can be coupled to a wide array of molecules in order to improve its solubility, pharmacokinetic properties, and/or efficacy. The effectiveness of BNCT strongly depends on the ability of delivering high concentrations of boron in the target tissue.

Due to their ability to be preferentially retained in tumor tissues,[3] porphyrins appear to be promising vehicles for the delivery of necessary concentrations of boron into the target tissues. Thus we have undertaken the synthesis of new porphyrin derivatives bearing carborane clusters; synthesis and characterization of these new derivatives will be presented. The new compounds may be regarded both as tumor targeting sensitizers for boron neutron capture therapy and as photosensitizers for PDT of the same malignancies.

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