

Polynorbornene based Pt prodrug for efficient site-specific cancer therapy

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Theranostic is a system which integrates therapy and diagnosis together in a single system. These systems give the opportunity to deliver the non-emissive drug and help it to track the therapeutic pathway. Here in this work we have successfully designed and synthesized the norbornene based copolymer covalently anchored with non-emissive Pt (II) drug along with dual imaging motif. Norbornene cobalt motif was used for MRI imaging and end chain functionalized pyrene for optical imaging. The MRI capabilities of the nano-carrier was tested by water relaxation studies at different concentrations. The synthesis of all monomers and copolymers were confirmed by NMR spectroscopy and GPC technique. Further the incorporation of peg folate moiety to the system makes it site-specific in nature. The invitro study shows the effective distribution of nano-carrier at the cellular level. The pharmacokinetics study shows the stability of this nano-carrier compare to free drug. This modified theranostic nano-carrier is expected to have a promising role in the field of cancer therapy.