

ABSTRACT

The present invention discloses a plasmid enhancement agent for high intensity focused ultrasound (HIFU) treatment, which can increase acoustic energy deposition at the target location during HIFU treatment. The enhancement agent comprises a nanometer-sized biocompatible solid. The present invention also discloses another plasmid enhancement agent for HIFU treatment, wherein, the enhancement agent comprises a discontinuous phase is comprised of a core material encapsulated by a membrane-forming material, and a continuous phase comprised of aqueous medium; the discontinuous phase is uniformly dispersed in the continuous phase and has a particle size ranging from 10-1000nm; the amount of the membrane-forming material in the enhancement agent is 0.1-100g/L; and the core material comprises nanometer-sized biocompatible solid selected from the group consisting of magnetic biomaterials, hydroxylapatite, and calcium carbonate, and the amount of the core material in the enhancement agent is 0.1-150g/L. The plasmid enhancement agent for HIFU treatment of the present invention can significantly change the acoustic environment of the target location and can increase acoustic energy deposition at the target location during HIFU treatment. Eventually, the effectiveness of clinical HIFU treatment to ablate the tumor cells can be significantly improved. Accordingly, the present invention discloses use of the above plasmid enhancement agent for HIFU treatment during HIFU treatment.