

ABSTRACT

The present invention provides a steroid-cationic lipid compound having a structure represented by formula (I), and use thereof. The compound can be used in the preparation of lipid nanoparticles (LNPs) for delivering a therapeutic agent and/or a prophylactic agent. The LNPs prepared by using the steroid-cationic lipid compound of the present invention have good stability and transfection efficiency. The LNPs are used for delivering nucleic acid, such as mRNA, and can efficiently and stably deliver a bioactive substance to a target cell or organ. In addition, the LNPs have high stability, can be used for developing a freeze-dried preparation of mRNA, can also be used for aerosol inhalation administration of mRNA, and can cause a high specific antibody response in an experimental animal body, and the compound is safer.

