Accepted Manuscript

 α -Tocopherol-ascorbic acid hybrid antioxidant based cationic amphiphile for gene delivery: Design, Synthesis and transfection

Venkanna Muripiti, Lohchania Brijesh, Hari Krishnareddy Rachamalla, Srujan Kumar Marepally, Rajkumar Banerjee, Srilakshmi V. Patri

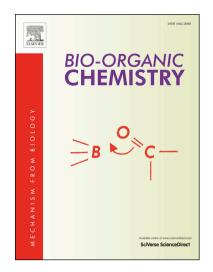
PII: S0045-2068(18)30062-2

DOI: https://doi.org/10.1016/j.bioorg.2018.02.025

Reference: YBIOO 2285

To appear in: Bioorganic Chemistry

Received Date: 24 January 2018 Revised Date: 23 February 2018 Accepted Date: 23 February 2018



Please cite this article as: V. Muripiti, L. Brijesh, H. Krishnareddy Rachamalla, S. Kumar Marepally, R. Banerjee, S.V. Patri, α-Tocopherol-ascorbic acid hybrid antioxidant based cationic amphiphile for gene delivery: Design, Synthesis and transfection, *Bioorganic Chemistry* (2018), doi: https://doi.org/10.1016/j.bioorg.2018.02.025

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

α-Tocopherol-ascorbic acid hybrid antioxidant based cationic amphiphile

for gene delivery: Design, Synthesis and transfection

Venkanna Muripiti¹, Lohchania Brijesh², Hari KrishnareddyRachamalla³, Srujan Kumar

Marepally², Rajkumar Banerjee³, Srilakshmi. V Patri^{1*}

¹National Institute of Technology, Warangal-506004, Telangana, India, ³Division of Lipid

Science and Technology, Indian Institute of Chemical Technology, Hyderabad-500607,

Telangana, India, ²Centre for Stem Cell Research, Vellore-632002, Tamil Nadu, India.

Email: patrisrilakshmi@gmail.com

ABSTRACT:

Natural antioxidants and vitamins have potential to protect biological systems from

peroxidative damage induced by peroxyl radicals, α-tocopherol (Vitamin E, lipid soluble) and

ascorbic acid (vitamin C, water soluble), well known natural antioxidant molecules. In the

present study we described the synthesis and biological evaluation of hybrid of these two

natural antioxidants with each other via ammonium di-ethylether linker, Toc-As in gene

delivery. Two control cationic lipids N14-As and Toc-NOH are designed in such a way that

one is with ascorbic acid moiety and no tocopherol moiety; another is with tocopherol moiety

and no ascorbic acid moiety respectively. All the three cationic lipids can form self-

assembled aggregates. The antioxidant efficiencies of the three lipids were compared with

free ascorbic acid. The cationic lipids (Toc-As, N14-As and Toc-NOH) were formulated

individually with a well-known fusogenic co-lipid DOPE and characterization studies such as

DNA binding, heparin displacement, size, charge, circular dichroism were performed. The

biological characterization studies such as cell viability assay and in vitro transfection studies

were carried out with the above formulations in HepG2, Neuro-2a, CHO and HEK-293T cell

1

Download English Version:

https://daneshyari.com/en/article/11263248

Download Persian Version:

https://daneshyari.com/article/11263248

<u>Daneshyari.com</u>