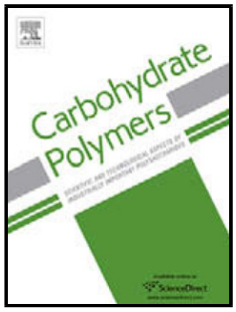

Title: Multi-functionalized<!–<query id="Q1">Please note that the significance of indicator Ïöf first three authors has not been provided, thus the indicator has been deleted. Please check.</query>–> chitosan nanoparticles for enhanced chemotherapy in lung cancer

Authors: Xueling Guo, Qianfen Zhuang, Tianjiao Ji, Yinlong Zhang, Changjian Li, Yueqi Wang, Hong Li, Hongying Jia, Yang Liu, Libo Du

PII: S0144-8617(18)30480-6
DOI: https://doi.org/10.1016/j.carbpol.2018.04.087
Reference: CARP 13541

To appear in:

Received date: 3-1-2018
Revised date: 17-4-2018
Accepted date: 23-4-2018

Please cite this article as: { https://doi.org/

Multi-functionalized chitosan nanoparticles for enhanced chemotherapy in lung cancer

Xueling Guo, [a,b,1] Qianfen Zhuang, [a,1] Tianjiao Ji, [c,1] Yinlong Zhang, [c] Changjian Li, [a,b] Yueqi Wang, [a,b] Hong Li, [a,b] Hongying Jia, [a] Yang Liu, [a,*] and Libo Du [a,*]

[a]State Key Laboratory for Structural Chemistry of Unstable and Stable Species, Center for Molecular Sciences, Institute of Chemistry, Chinese Academy of Sciences, 100190, Beijing, China

[b]Graduate School, University of Chinese Academy of Sciences, 100049, Beijing, China

[c]National Center for Nanoscience and Technology, 100190, Beijing, China

* Corresponding author. Tel.: +86 10 62571074; fax: +86 10 62559373.

E-mail address: yliu@iccas.ac.cn; dulibo@iccas.ac.cn

Highlights

- A multifunctional nanocarrier (MTX@AuNCs-CS-AS1411) was designed and synthesized.
- MTX@AuNCs-CS-AS1411 exhibit high anticancer activity against human lung cancer cells.
- MTX@AuNCs-CS-AS1411 could selectively accumulate in exogenous tumor and effectively inhibit tumor growth without overt toxicity.

Abstract: Chemotherapy-based treatment for cancer has made great progress in the past decades. However, there is still a big challenge for the treatment of lung cancer. Herein, a multifunctional nanocarrier was developed through electrostatic interaction between the fluorescent gold nanocluster-conjugated chitosan and the nucleolin targeting AS1411 aptamer. Then methotrexate was loaded into the multifunctional nanocarrier through hydrophobic interaction to obtain the nanodrug carrier systems. The prepared nanodrug carrier systems have an average nanoparticle