

Accepted Manuscript

Title: Hyaluronic acid-functionalized half-generation of sectorial dendrimers for anticancer drug delivery and enhanced biocompatibility

Authors: Xiao Du, Shaoping Yin, Yang Wang, Xiaochen Gu, Guangji Wang, Juan Li



PII: S0144-8617(18)31079-8
DOI: <https://doi.org/10.1016/j.carbpol.2018.09.015>
Reference: CARP 14058

To appear in:

Received date: 23-11-2017
Revised date: 27-6-2018
Accepted date: 7-9-2018

Please cite this article as: Du X, Yin S, Wang Y, Gu X, Wang G, Li J, Hyaluronic acid-functionalized half-generation of sectorial dendrimers for anticancer drug delivery and enhanced biocompatibility, *Carbohydrate Polymers* (2018), <https://doi.org/10.1016/j.carbpol.2018.09.015>

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.

Hyaluronic acid-functionalized half-generation of sectorial dendrimers for anticancer drug delivery and enhanced biocompatibility

Xiao Du ^a, Shaoping Yin ^a, Yang Wang ^a, Xiaochen Gu ^c, Guangji Wang ^b, Juan Li ^{a,*}

^a Department of Pharmaceutics, School of Pharmacy, China Pharmaceutical University, Nanjing, China 210009

^b Center for New Drug Safety Evaluation and Research, China Pharmaceutical University, Nanjing, China 210009

^c College of Pharmacy, University of Manitoba, 750 McDermot Avenue, Winnipeg, MB, Canada R3E 0T5

*Corresponding author: Dr. Juan Li, Department of Pharmaceutics, China Pharmaceutical University, 24 Tong Jia Xiang, Nanjing, 210009, E-mail: lijuancpu@163.com

Highlights

- Biocompatible half-generation of sectorial PAMAM G4.5 was successfully synthesized using a divergent route with an ethanolamine core.
- The stability of the micelle was further increased by adding HA.
- The charge conversion effect was HAase-mediated and acidic pH-dependent.
- HA-PALA-DTX can be explored as a promising candidate as a chemotherapeutic carrier.

Abstract

Biocompatible, pH-sensitive and charge-conversion micelles derived from hyaluronic acid (HA), poly(lactide) (PLA) and half-generation of sectorial poly(amidoamine) dendrimers (sPA G4.5) were designed and fabricated to target delivery of docetaxel (DTX) to cancer cells. The novel micelles (HA-PALA-DTX) possessed stability against rat plasma and were capable of reversing surface zeta potential under acidic conditions in the presence of HAase. Moreover, the blank micelles demonstrated satisfactory biocompatibility and viability for biomedical applications. A cellular internalization experiment indicated that HA played an important role in increasing intracellular accumulation of DTX delivered by the micelles. Compared to Taxotere[®] and PALA-DTX, HA-PALA-DTX showed an enhanced anticancer activity in vivo, with a tumor growth inhibition rate of 72.32±5.22%. Overall, the functionalized micelles could be

Download English Version:

<https://daneshyari.com/en/article/10141191>

Download Persian Version:

<https://daneshyari.com/article/10141191>

[Daneshyari.com](https://daneshyari.com)