

Accepted Manuscript

Preparation of bergenin - Poly (lactic acid) polymers and in vitro controlled release studies

Meili Shen, Hongli Li, Mingwei Yuan, Lin Jiang, Xiangyu Zheng, Shuang Zhang, Minglong Yuan



PII: S0141-8130(18)30486-0
DOI: doi:[10.1016/j.ijbiomac.2018.04.118](https://doi.org/10.1016/j.ijbiomac.2018.04.118)
Reference: BIOMAC 9526

To appear in:

Received date: 29 January 2018
Revised date: 30 March 2018
Accepted date: 23 April 2018

Please cite this article as: Meili Shen, Hongli Li, Mingwei Yuan, Lin Jiang, Xiangyu Zheng, Shuang Zhang, Minglong Yuan , Preparation of bergenin - Poly (lactic acid) polymers and in vitro controlled release studies. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Biomac(2017), doi:[10.1016/j.ijbiomac.2018.04.118](https://doi.org/10.1016/j.ijbiomac.2018.04.118)

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.

Preparation of Bergenin - Poly (Lactic Acid) Polymers and In Vitro Controlled Release Studies

Meili Shen[†], Hongli Li^{†*}, Mingwei Yuan, Lin Jiang, Xiangyu Zheng, Shuang Zhang, and
Minglong Yuan *

Engineering Research Center of Biopolymer Functional Materials of Yunnan, Yunnan Minzu University, Kunming 650500, China.

* Correspondence: yml@ynni.edu.cn (M.Y.); honglili_1982@163.com(H.L.);Tel.: +86-0871-6591-4825 (M.Y.)

† These authors contributed equally to this work.

Abstract: The efficacy of bergenin prepared with osmotic-pump-controlled release is much lower than expected. In this study, biodegradable polylactic acid is used to modify bergenin and immobilize it with chemical methods. Bergenin-PLA obtained by this method has low molecular weight and good thermal stability, as well as prolonged in vitro release time along with increased molecular weight. Biocompatibility tests and in vitro antitumor tests showed that Bergenin-PLA at a ratio of 1:30 has good biological properties and low cytotoxicity at three concentrations, and its antitumor activity was significantly increased compared to Bergenin. The chemical immobilization of bergenin not only provides a good mode of administration for patients but also provides a good foundation for the sustained release of drugs over time.

Keywords: bergenin, L-lactic acid O-carboxyanhydrides, bergenin-polylactic acid, controlled-release, blood compatibility, antineoplastic activity

1 Introduction

Bergenin is the active ingredient extracted from the purple bergenia herb. Its functions include relieving cough, and it is an effective medicine for the treatment of respiratory diseases, such as chronic bronchitis, bronchial asthma, emphysema and pulmonary heart disease. Because bergenin has poor water solubility, the efficacy of prepared dosage forms using osmotic-pump-controlled release [1-3] is far lower than expected.

With the combination and overlap between polymer materials science and modern medicine, polymer materials have become one of the most popular research topics due to their potential use as controlled-release vectors for drugs [4]. Scientific studies have shown that polymer materials

Download English Version:

<https://daneshyari.com/en/article/8327103>

Download Persian Version:

<https://daneshyari.com/article/8327103>

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