

Accepted Manuscript

Doxorubicin-loaded casein nanoparticles for drug delivery:
Preparation, characterization and in vitro evaluation

Sona Gandhi, Indrajit Roy



PII: S0141-8130(18)33706-1
DOI: doi:[10.1016/j.ijbiomac.2018.10.005](https://doi.org/10.1016/j.ijbiomac.2018.10.005)
Reference: BIOMAC 10652

To appear in: *International Journal of Biological Macromolecules*

Received date: 19 July 2018
Revised date: 18 September 2018
Accepted date: 1 October 2018

Please cite this article as: Sona Gandhi, Indrajit Roy , Doxorubicin-loaded casein nanoparticles for drug delivery: Preparation, characterization and in vitro evaluation. *Biomac* (2018), doi:[10.1016/j.ijbiomac.2018.10.005](https://doi.org/10.1016/j.ijbiomac.2018.10.005)

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.

Doxorubicin-loaded casein nanoparticles for drug delivery: Preparation, characterization and in vitro evaluation

Sona Gandhi, Indrajit Roy*

Department of Chemistry, University of Delhi, Delhi-110007

Corresponding Author:

Indrajit Roy,

Associate Professor,

Department of Chemistry,

University of Delhi, Delhi, India

Email: indrajitroy11@gmail.com

Abstract

Casein, a milk protein that self-assembles to form micelles in aqueous solution, can bind to a wide range of drugs (hydrophilic and hydrophobic). Herein, a low cost and facile method was reported to prepare casein nanoparticles loaded with an anticancer drug, doxorubicin (DOX). The particles were fabricated by adding an excess of Ca^{2+} ions which brings the soluble casein present in the solution into the micellar framework to form dense nanoparticles. The binding between the drug and the macromolecule was confirmed using fluorescence studies. Circular Dichroism (CD) shows that upon addition of excess Ca^{2+} the protein chains rearrange. The nanoparticles were characterized by transmission electron microscopy (TEM), field emission scanning electron microscopy (FESEM), and dynamic light scattering (DLS). The release at pH 1 was higher than the physiological pH making this formulation potent for delivering the drug to the stomach via the oral route. The DOX

Download English Version:

<https://daneshyari.com/en/article/11010942>

Download Persian Version:

<https://daneshyari.com/article/11010942>

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