

Accepted Manuscript

The Battle of “Nano” Paclitaxel

Alexandros Marios Sofias, Michael Dunne, Gert Storm, Christine Allen

PII: S0169-409X(17)30030-3
DOI: doi:[10.1016/j.addr.2017.02.003](https://doi.org/10.1016/j.addr.2017.02.003)
Reference: ADR 13090

To appear in: *Advanced Drug Delivery Reviews*

Received date: 19 December 2016
Revised date: 21 February 2017
Accepted date: 24 February 2017



Please cite this article as: Alexandros Marios Sofias, Michael Dunne, Gert Storm, Christine Allen, The Battle of “Nano” Paclitaxel, *Advanced Drug Delivery Reviews* (2017), doi:[10.1016/j.addr.2017.02.003](https://doi.org/10.1016/j.addr.2017.02.003)

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.

The Battle of “Nano” Paclitaxel

Alexandros Marios Sofias^{a,c}, Michael Dunne^a, Gert Storm^{c,d}, Christine Allen^{a,b,*}

^a Leslie Dan Faculty of Pharmacy, Department of Pharmaceutical Sciences, University of Toronto, Toronto, Ontario, Canada

^b Institute of Biomaterials and Biomedical Engineering, University of Toronto, Toronto, Ontario, Canada

^c Utrecht Institute of Pharmaceutical Sciences, Department of Pharmaceutics, Utrecht University, Utrecht, The Netherlands

^d Department of Biomaterials Science and Technology, University of Twente, Enschede, The Netherlands

* Corresponding author at: Christine Allen, Leslie Dan Faculty of Pharmacy, University of Toronto, 144 College Street, Toronto, Ontario, M5S 3M2, Canada.

Email addresses: alexandros Sofias@outlook.com (A.M. Sofias), m.dunne@utoronto.ca (M. Dunne), g.storm@uu.nl (G. Storm), cj.allen@utoronto.ca (C. Allen).

Abstract

Paclitaxel (PTX) is one of the three most widely used chemotherapeutic agents, together with doxorubicin and cisplatin, and is first or second line treatment for several types of cancers. In 2000, Taxol, the conventional formulation of PTX, became the best selling cancer drug of all time with annual sales of 1.6 billion. In 2005, the introduction of the albumin-based formulation of PTX, known as Abraxane, ended Taxol's monopoly of the PTX market. Abraxane's ability to push the Taxol innovator and generic formulations aside attracted fierce competition amongst competitors worldwide to develop their own unique, new and improved formulation of PTX. At this time there are at least 18 companies focused on pre-clinical and/or clinical development of nano-formulations of PTX. These pharmaceutical companies are investing substantial capital to capture a share of the lucrative global PTX market. It is hoped that any formulation that dominates the market will result in tangible benefits to patients in terms of both survival and quality of life. Given all of this activity, here we address the question: Who is going to win the battle of “nano” paclitaxel?

Keywords

Nanotechnology; Nanomedicine; Paclitaxel; Taxol[®]; Abraxane[®]; Oncology

Highlights

- In 2000, Taxol, the conventional formulation of paclitaxel became the best selling cancer drug of all time with annual sales of 1.6 billion
- The nanomedicine Abraxane ended Taxol's monopoly of the paclitaxel market and is poised to reach annual sales of 1 billion this year
- Abraxane's ability to displace Taxol encouraged small and large biotech and pharma companies to develop their own nano-formulations of this drug with several now reaching clinical development
- A comprehensive analysis of the performance of these new formulations demonstrates that they are largely clinically equivalent to Abraxane leaving significant room for design of a superior formulation

Download English Version:

<https://daneshyari.com/en/article/8402361>

Download Persian Version:

<https://daneshyari.com/article/8402361>

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