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REVIEWER'S REPORT

Manuscript No.: IJAR-50705

Date: 18-03-2025

Title: Impact of Micellar Characteristics on the Dissolution and Efficacy of Anticancer Agents: A Review

Recommendation:

- Accept as it is.....**YES**.....
- Accept after minor revision.....
- Accept after major revision
- Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality	√			
Techn. Quality		√		
Clarity		√		
Significance			√	

Reviewer's Name: Dr Aamina

Reviewer's Decision about Paper: **Recommended for Publication.**

Comments (*Use additional pages, if required*)

Reviewer's Comment / Report

Abstract

The abstract effectively presents an overview of micellar drug delivery systems, emphasizing their role in enhancing the solubility, stability, and bioavailability of hydrophobic anticancer agents. The discussion on the impact of micellar properties such as size, shape, surface charge, and stability on drug dissolution and efficacy is well-structured. The potential benefits, including improved tumor penetration and controlled drug release, are clearly outlined. Additionally, the acknowledgment of existing challenges, such as long-term stability and premature drug release, provides a balanced perspective. Overall, the abstract concisely summarizes the study's objectives and findings.

Keywords

The chosen keywords—Micellar Characteristics, Dissolution, Drug Delivery, Anticancer Agents, Surface Charge—are relevant and well-aligned with the study's focus, ensuring proper indexing and searchability.

Introduction

The introduction effectively contextualizes the need for micellar drug delivery systems in addressing the poor solubility and bioavailability of anticancer agents. The explanation of micelles as amphiphilic

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molecule-based carriers is clear and scientifically sound. The reference to previous studies on micelle-mediated drug delivery adds credibility to the discussion. The inclusion of polymeric micelles and their core-shell structure is well-explained, providing a strong theoretical foundation.

The discussion on critical micelle concentration (CAC) and the role of different biodegradable polymers in micelle formation is informative. The reference to figures for visual representation of micellar structures is helpful for comprehension. The literature citations further strengthen the manuscript's scientific basis.

Overall Assessment

The manuscript is well-organized, presenting a comprehensive review of micellar characteristics and their impact on anticancer drug delivery. The discussion is well-supported by relevant literature, and the explanations are clear and precise. The study provides valuable insights into micellar drug delivery systems, highlighting both advantages and existing challenges. The content is well-suited for researchers in pharmaceutical sciences, nanotechnology, and oncology drug development.