

## **In Vitro and In Vivo Characterization of Flutamide-Loaded Polymeric Nanocarriers for Prostate Cancer Treatment**

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### **Abstract**

This research delves into the in vitro and in vivo characterization of flutamide-loaded polymeric nanocarriers as a promising approach for prostate cancer treatment. The study aims to evaluate the biological performance and therapeutic efficacy of the engineered nanocarriers using cell culture models and preclinical animal studies. In vitro studies will focus on assessing the cytotoxicity, cellular uptake, and anti-proliferative effects of the flutamide-loaded nanocarriers on prostate cancer cells. Techniques such as flow cytometry, confocal microscopy, and cell viability assays will be employed to analyze the nanocarriers' impact on cancer cell behavior. Subsequently, in vivo experiments using prostate cancer xenograft models will be conducted to evaluate the nanocarriers' pharmacokinetics, biodistribution, and antitumor activity. The findings from this research will provide critical insights into the biocompatibility and therapeutic potential of the flutamide-loaded polymeric nanocarriers. The in vitro and in vivo characterization will offer a comprehensive understanding of the nanocarriers' behavior within biological systems, paving the way for translational research and potential clinical applications in prostate cancer therapy.

