



Polymeric Biomaterials for Healthcare Applications

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6 - A glimpse of biomedical application potential of biodegradable polymers for anticancer drug delivery

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Abstract

The major anticancer drugs used for cancer therapy show nonspecificity, wide biodistribution, a short half-life, a low concentration in tumor tissue, and systemic toxicity. The biodegradable polymer can be used as an approach that acts as a drug carrier, offering a targeted drug delivery and increasing the drug payload to the tumor tissues and cells. It also enhances biocompatibility, provides prolonged release of the drug allowing controlled and sustained release, and minimizes systemic toxicity. This chapter focuses on targeted drug delivery through a stimuli-responsive drug carrier that releases its payload at the specified site and on demand in response to an external stimulus. It also emphasizes various applications of biodegradable polymers in breast cancer, lung cancer, colon cancer, and uterine cancer with special emphasis on theranostic applications. Some patents on biodegradable polymer-based anticancer drug delivery are also discussed in this chapter.

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Keywords

Chemotherapeutics; biodegradable polymers; polylactides; nanoparticles; controlled release; polymeric particles