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Biopharmaceutics of cancer: Drug delivery systems to maximize efficiency of anti-cancer drugs

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Cancer is second most common cause of death in US & millions die worldwide due to different types of cancers. Cancer is an uncontrolled division of abnormal cells and spreading of the same into surrounding tissues. This phenomenon interferes with digestive, nervous, circulatory systems and alters the body function. In many ways, cancer cells are different from normal cells. Normal cells mature into very distinct cell types with specific functions, whereas cancer cells don't. Cancer cells don't follow the apoptosis process (programmed cell death), thus continue to divide into multiples. Cancer cells influence microenvironment, for example formation of blood vessels, over expression of certain receptors to have access to nutrients necessary for the growth. Predominantly anticancer drugs are being used for the treatment of cancers. However, they do have dose-related cardio and neuro toxicities. Further they are mostly nonspecific to cancer cells. It means they not only kill the cancer cells but also the normal cells. These issues make the treatment difficult. Recently, researchers are employing different methods to maximize the drugs efficiency at the same time trying to reduce the adverse events caused by them. Classically drugs are being delivered to the tumors locally or targeted to the cancer cells. However, regulatory approval of such delivery systems becomes more stringent due to inherent toxicity raised from the drug delivery systems. Current study explains the different ways of targeting cancer cells using biodegradable/biocompatible delivery system to maximize the drug's efficiency. In this study, hydrogels of biocompatible nature are being employed to deliver the drugs.

Biography

Raja Mohamed has completed his PhD from Indian Institute of Technology (IIT) Delhi & Technical University, Dresden, Germany & a Post-Doctoral Fellowship. He worked as technical lead in Dept. of Science & Technology; Govt of India sponsored Research Project to Orchid Healthcare & IIT Chennai. He had been awarded prestigious DAAD fellowship to carryout research work in Germany. Currently he is heading Bio strategy Team @ Orchid Healthcare Ltd. He has guided several M. Pharm, B. Pharm & B. Tech graduates. He has published many research papers in reputed international and national journals.

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