



Loading imatinib on to zein nanoparticles and checking its release by pH-dependent

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ABSTRACT

Over the past three decades, there has been a considerable research interest in the area of developing drug delivery using nanoparticles (NPs) as carriers for small and large molecules. Targeting delivery of drugs to the diseased lesions is one of the most important aspects of drug delivery system. Zein-based delivery systems have been particularly investigated for hydrophobic drugs and nutrients. Recently, increasing attention has been drawn to fabricate zein-based advanced drug delivery systems for various applications. Imatinib (IMT) is a cancer medication prescribed to is used to treat certain types of leukemia and other cancers and disorders of the blood cells. (IMT) is in a class of medications called kinase inhibitors. This study proposes a new zein nanoparticle (ZP) encapsulated imatinab (IM). The drug release to be examined by changing pH. The ZPs were prepared by phase separation process. in vitro drug release to be examined in pH 2 and pH 7.4 Zein was dissolved in a concentration of 10 mg / ml in ethanol 78%. The crystal size of the zein nanoparticles is calculated by the Sherer's method by XRD.

The drug is loaded into nanoparticles and using the dialysis method, it is released in an acidic environment (the environment close to the cancer cell) and the base environment (the natural environment of the body).

Keywords: Zein, Drug delivery, Drug release, Imatinib (IMT)

1. INTRODUCTION

Drug delivery describes the method and approach to delivering drugs or pharmaceuticals to their site of action within an organism, with the goal of achieving a therapeutic outcome. In recent years, biotechnology and biomedical science have played a major role in devising drug delivery systems and especially, progress in incorporation of nanotechnology for biomedical investigations has offered innovative materials and approaches for drug delivery applications, which provide many advantages over traditional routes of administering pharmaceutical products [1], [2]. The biological effects of a drug in a patient depend upon the pharmacological properties of the drug. These effects arise due to the interaction between the drug and receptors at the site of action of the drug. However, the efficacy of this drug-target interaction stands undermined unless the drug is delivered to its site of action at such a concentration and rate that causes the minimum side effects and maximum therapeutic effects [3].

Targeted drug delivery, also known as smart drug delivery, is a method of treatment that involves the increase in medicament in one or few body parts in comparison to others. Two strategies are widely used for drug targeting to the desired organ/tissue: passive targeting and active targeting. Drug delivery vehicles transport the drug either within or in the vicinity of target. An ideal drug delivery vehicle is supposed to cross even stubborn