VIRAL NANOPARTICLE AS A POTENTIAL DRUG CARRIER FOR TARGETED DRUG DELIVERY SYSTEMS

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ABSTRACT

The modern world is filled with life-threatening diseases and to cure these diseases new drugs are invented and administered. The side effects of these drugs on patient administration are even more life-threatening. These side effects are generally caused because these drugs administered are not targeted specific.

So, the main objective of this project is to create a novel drug delivery system which is highly targets specific and which cures the disease with no side effects.

KEYWORDS: *Hibiscus Chlorotic Ringspot Virus, DOXORUBIN & Breast Cancer*

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INTRODUCTION

Viruses have a highly targeted specific in nature. And these viruses can be used as a carrier for targeted drug delivery systems if its RNA or its genetic material is removed from its protein core. We can use human viruses and plant viruses as carriers. I have chosen plant virus because they are highly targeted specific. Chemical functionalization of a plant viral particle surface can impart stealth properties to prolong in vitro circulation and a good half- life. They are also highly biocompatible.

OBJECTIVE

The objective of this study is to prepare a DOXORUBIN loaded in HIBISCUS CHLOROTIC RINGSPOT VIRUS protein cage which acts as a drug carrier with folic acid conjugation.

PRINCIPLE

- Removal of viral RNA from the plant virus and purification of coat protein.
- Encapsulation of poly acids and doxorubicin during reassembly of the protein cage.
- The use of poly acids is to have controlled release.
- Conjugation of folic acid onto the viral coat protein.
- The use of folic acid is because it specifically targets only breast cells.

METHODOLOGY

- Virus-like particles was readily produced by destabilizing the HCRSV in 8M urea or Tris buffer pH 8 in the absence of calcium ions.
- The removal of viral RNA can be done by ultra high-speed centrifugation.
- The loading of drug molecules into the viral-like proteins is dependent on electrostatic interactions.
- Anionic poly acids such polystyrene sulfonic acid and anionic drug molecules are successfully loaded.
- The reassembly of the coat protein is done with sodium acetate buffer pH 5.
- Folic acid can also be conjugated along with it.

RESULTS

A Virus is highly targeted specific, it only attaches itself to the cancer cells at a particular diseased site. The cancer is cured and the side effects of chemotherapy are minimized to a very large extent.

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