



NANOPARTICLE BASED DUAL DRUG DELIVERY SYSTEM

Background:

With the advent of nanotechnology, the methods of delivering drugs have changed drastically. However, the problems such as poor bioavailability, instability in the circulation, inadequate tissue distribution and potential toxicity raise concerns over safety of administering the therapeutic agents and/or chemotherapeutic agents, especially for long-term administration persists. Therefore, there is a need to develop an effective delivery complex which can effectively deliver both anti-cancer molecules and/or nucleic acid molecule selectively to the target cells.

Technology:

The technology relates to a novel dipeptide nanoparticle with a conformationally restricted amino acid and a charged amino acid arm. This stable delivery molecule is capable of hosting at least one small molecule and at least one nucleic acid molecule as cargo delivery molecules for effective and targeted drug delivery.

Applications:

- Method of preparing a stable dual drug delivery system.
- mRNA/DNA Vaccine and Adjuvants.
- Anticancer drugs with siRNA.
- Can be used to test drugs and conduct in-vitro cell line-based studies.

Advantages:

- It is a stable system capable of delivering two different molecules to the target site.
- It is easy to synthesize and biocompatible.



lar uptake of Arg∆Phe NP

with drug and siRNA

Arg&Phe NPs + Doxorubicin + Oligonucleotide, VEGF siRNA (100-120nm)

IP status:

PCT application filed– PCT/IN2021/050170. Application Published – WO 2021/165998 A1 Indian National Phase application filed: Application no. 202217053486 (Unpublished)