



## Nano-Sized polymers for Targeted Drug Delivery Systems in Cancer Therapy

**Akbari H<sup>1\*</sup>, Asefnejad A<sup>1</sup>**

1) Department of Biomedical Engineering, Science and Research Branch, Islamic Azad University, Tehran, Iran

\*Corresponding author: Hossein Akbari, M.Sc. student of biomedical engineering, Tel: (+98)2144474323, E-mail: akbari.h.bme@gmail.com

### Abstract

**Introduction & Aim:** Polymers are widely used as biomaterials due to their favorable Properties. Especially in the field of targeted drug delivery, polymer played a significant role because it can deliver therapeutic agents directly into the intended site of action, with superior efficacy.

**Methods:** Various kinds of polymers are used to prepare the polymeric nanoparticles, among this all polymers and their co-polymers have been generally used to prepare polymeric nanoparticles and to encapsulate the active ingredients. These multi-functionalized polymeric nano-carriers include micelles, capsules, platelets, fibers, etc. Generally the drug loaded nanoparticles were prepared by dissolving the drug and polymer into the water-immiscible organic solvents. The organic solvent is removed by using elevated temperature or reduced pressure.

**Results:** The route of therapeutics is crucially important to cure the disease. Despite the invention of potential therapeutic moieties, the inefficient drug targeting. In new routes of therapeutics with improved responses have been achieved by high drug concentration in target. Targeted drug delivery can be prescribed dose of the drug to its target, and drug-induced side effects are minimized.

**Conclusion:** The uses of bio-nanotechnology in therapeutics a number of unexpected inventions have been done recently on polymer based nanometers, which have great attention in the field of targeted drug delivery applications. So the pharmaceutical industry has to bring these products into industry-led investigation and the improvement in this would possibly to quicken their progress.

**Key words:** Nano-Sized, polymers, Targeted, Drug Delivery Systems, Cancer Therapy