

عنوان مقاله:

Cyclodextrin, platforms for drug delivery, gene delivery and removal toxic organic and inorganic pollutants

محل انتشار:

سومین سمپوزیوم بین المللی سرطان نسترن (سال: 1396)

تعداد صفحات اصل مقاله: 1

نویسندگان:

Elham Einafshar - School Of Chemistry, Damghan University, Damghan, Iran

Ali Haghighi Asl - Faculty Of Chemical, Gas And Petroleum Engineering, Semnan University, Semnan, Iran

Azim Malekzadeh - School Of Chemistry, Damghan University, Damghan, Iran

Azadeh Hashemnia - Pharmaceutical Research Center, Mashhad University Of Medical Sciences, Mashhad, Iran

خلاصه مقاله:

Cyclodextrins (CDs) are oligosaccharide including glucose units by α -(1, 4) glycosidic bonds linked to gather, which are an internal hydrophobic and external hydrophilic cavity. α , β and γ -CDs are commonly used for various application in many filed. CDs are friendly environmentally, water-soluble and have a significant capacity to form complexes with the hydrophilic material (such as organic, inorganic molecules and biological and hydrophobic drug) and can be improved the stability and solubility of functional material. Application of CDs for drug delivery and gene delivery: Large numbers of subject of research articles and scientific abstracts which deal with cyclodextrins and drug-related products. The cavity of cyclodextrin is an important driving force for formation of the complex with drug than other forces. These forces include van der Waals interactions, hydrogen bonding, hydrophobic interactions, the release of ring strain in the cyclodextrin molecule and changes in solvent-surface tensions. Cyclodextrins used to improve the stability of drugs and decrease their degradation to hydrolysis, oxidation, UV light, heat, metal salts and protect irritating products and reduce the effects of bad smelling and bitter or irritant tasting drugs. Curcumin, camptothecin, and SN38 as a hydrophobic drug with anti-cancer effect incorporated into β -cyclodextrin to improve the water solubility. Application of CDs for removal organic and inorganic (heavy metal) pollution: Chemical and physiological properties of heavy metals make these material to useful in industrial areas including alloy, smelting and production of commercial products. Almost all heavy metals are serious toxicants as carcinogens; Arsenic, cadmium, chromium, and nickel are classified as group 1 carcinogens by the International Agency for Research on Cancer. The data showed that above-mentioned metallic substances induce oxidative stress, DNA damage, and cell death processes, resulting in increase the risk of cancer and cancer-related diseases. Thus, trying to remove these substances is helpful for cancer prevention. CDs are soluble in water, so they cannot be used for absorbent in aqueous solution directly. To overcome this limitation functionalized with other molecules or polymerization. Due to the different size of the cavity of cyclodextrin, each type can selectively act to remove certain toxic material. CDs have potential complexes with metal ions as metallo-enzyme models via selective complexation with cations without the requirement of their covalent linkage ... and could have a wide range of applications in c

کلمات کلیدی:

Cancer Prevention, Cancer Risks, Lifestyle and Cancer, Multidisciplinary Cancer Research, Chemotherapy

