Controlled Drug Delivery Systems by functionalized silica-based nanoparticles.

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Abstract

Introduction: : Mesoporous silica are solid materials that show the potential for a variety of controlled drug delivery applications because of some unique properties including porous, high surface area($900M^2/g$), pore volumes($0.9CM^3/g$), regular pore size with uniform distribution (2-10nm), chemical and thermal stability and biocompatibility and biodegradation. In this case, MCM-41 has the ability of loading more drug because pf larger pores. This amount of drug has increased by functionalizing the surface despite of decreasing the surface area.

Methods and Results: The Methods section should provide enough information to in this study after providing MCM-41 and functionalizing it with amino propyl,the procedure of soaking and eliminating (evaporating) the solvent were used for loading drug. For insuring of the loading drug and determination of loading ratio we used infrared spectroscopy (indirect) and x-ray diffraction (XRD) and BET way.Finally, the studies about drug release from system have been done in an environment simulated gastric and intestine fluid PH. In this article, Diclofenac sodium and Piroxicam as the sample and MCM-41 and functionalized MCM-41 as the carrier were used.

Conclusions: the drugs were released faster than the formulation that were produced from the eliminating procedure because drugs were more on surface. In this study, the effect of functionalizing the surface on drug release was not significant.

Key words: zeolite, diclofenac, piroxicam, drug delivery system,MCM-41

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