## عنوان مقاله:

Fabrication and evaluation of controlled release of Doxorubicin loaded UiO-۶۶-NH۲ metal organic frameworks

## محل انتشار:

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## خلاصه مقاله:

The metal-organic frameworks (MOFs) due to their large specific surface area and high biocompatibility are suitable as carriers for drug delivery systems (DDSs). In the present study, doxorubicin (DOX) as an anticancer drug was loaded into the UiO-۶۶-NH۲ MOFs to decrease the adverse side effects of pristine DOX use and to increase its efficiency through the controlled release of DOX from MOFs. The MOFs were synthesized via microwave heating method and characterized using X-ray diffraction, scanning electron microscopy, and Brunauer-Emmett- Teller analysis. The drug loading efficiency, drug release profiles from synthesized MOFs and pharmacokinetic studies were investigated. The biocompatibility of drug-loaded-UiO-۶۶-NH۲ MOFs was also evaluated by their incubation in L۹۲۹ normal fibroblast cells. The average particle sizes of UiO-۶۶-NH۲ MOFs and DOX loaded-MOFs were found to be ۱۷۵ nm, and ۲۰۰ nm respectively. The Brunauer-Emmett- Teller surface area of UiO-۶۶-NH۲ MOFs and DOX (۱۰۰ μg mL-۱) loaded-UiO-۶۶-NH۲ MOFs were estimated to be ۱۰۵۲ m۲g-۱, and ۱۲۱ m۲g-۱, respectively. The synthesized MOFs exhibited high capability for the controlled release of DOX from MOFs as a pH sensitive carrier. The DOX release data were best described using Korsmeyer-Peppas pharmacokinetic model (R۲≥۰.۹۸۵). The cell viability of synthesized MOFs against fibroblast normal cells was found to be higher than ۹۰%. It could be concluded that the UiO-۶۶-NH۲ MOFs could be used as an effective pH sensitive carrier for loading anticancer drugs.

## کلمات کلیدی:

Metal organic framework, UiO-۶۶-NH۲, doxorubicin, Controlled release, Biocompatibility