Poster

CaMOF as a drug delivery system for the antitumoral drug mitoxantrone

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ABSTRACT

Cancer is one of the diseases with highest incidence in the world. Among the multiple therapies available to treat it, chemotherapy is based on using citotoxic drugs designed to attack cancer cells. However, these drugs usually present toxic side effects for healthy cells, which has led to the search for treatment methods that avoid these harmful effects. Among these methods, drug encapsulation offers the benefit of a slow release, improving the treatment's efficacy and decreasing it's side effects; one such method that has attracted quite the attention in the last years is the use of metal-organic frameworks (MOFs), crystalline and ultraporous substances with a large surface that are able of adsorption and transport. In this study, we focus on the use of a particular MOF (calcium terephtalate-MOF, or CaMOF) and its capacity for mitoxantrone (an antitumoral drug, MTX) transport. The synthesis of CaMOF was described by Mazaj and Logar (2015), and occurs under solvothermal conditions (80 ºC, 24 h) in a H2O/DMF mixture. After synthesizing the MOF, it was then added to a MTX/phosphate buffer solution and analyzed via UV/Visible spectroscopy regularly to monitor the drug inclusion into the MOF. The results suggest that it indeed occurs, reaching maximum inclusion in hours. Further tests will study if on-demand release of the drug is possible, and the efficiency of MTX inclusion.

REFERENCES

Mazaj, M.; Logar, NS. Phase Formation Study of Ca-Terephthalate MOF-Type Materials. Cryst. Growth Des. 2015, 15, 617−624.