

Gelatin-coated Copper based Metal-Organic Framework For Controlled Insulin Delivery : Possibility Towards Oral Delivery System

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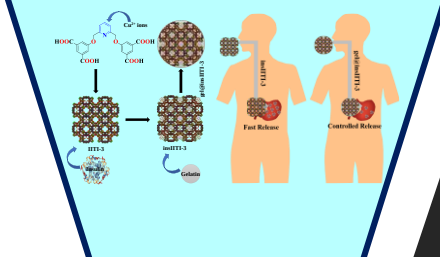
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Introduction

- ❖ Diabetes Miletus (DM) is the most challenging disease and mainly occurs in two types, type I (T1DM) and type II (T2DM)
- ❖ T1DM typically necessitates at least two, and frequently three or more, daily insulin injections
- ❖ Therefore, the development of oral insulin delivery systems is required to lessen the discomfort and pain experienced by patients

Abstract

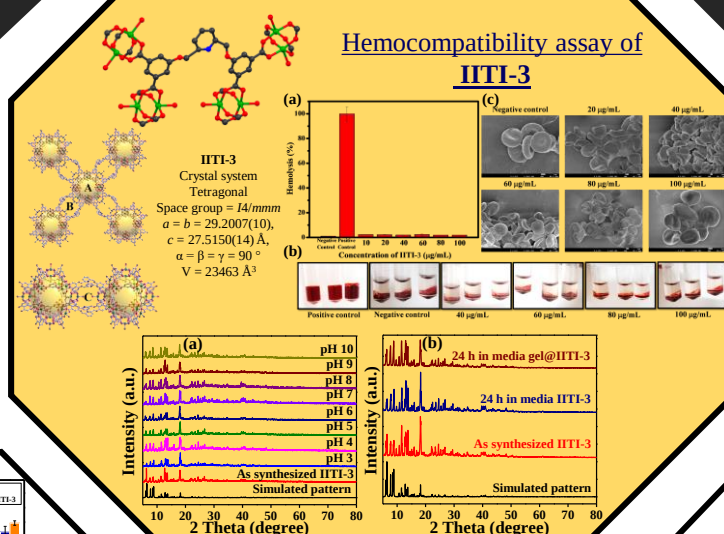


Introduction

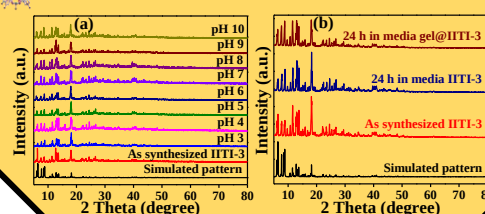
- ❖ Currently, the sustainable release of drugs from MOFs have gained considerable interest
- ❖ Gelatin is one of the natural polymers which is potentially used in the pharmaceutical industries
- ❖ Herein, we have designed/synthesized a new 3D Cu-MOF named **IITI-3** utilized for controlled insulin delivery via gelatin coating

Results and Discussion

Hemocompatibility assay of IITI-3



Stability test of IITI-3



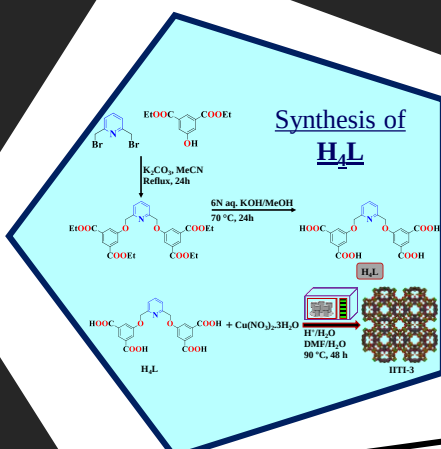
Conclusion

- ❖ A 3D Cu-MOF synthesized
- ❖ Stable in different pH, media, it is bio- as well as hemocompatible
- ❖ Insulin loading 20 wt% within 1 h
- ❖ Gelatin act as extra barrier for Insulin release

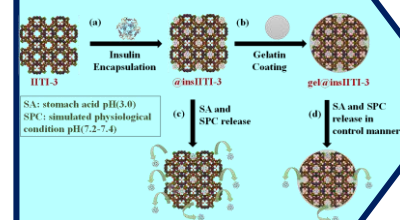
Reference

P. Kumar *et al.* ACS Materials
Lett. 2023, 5, 4,
1100–1108

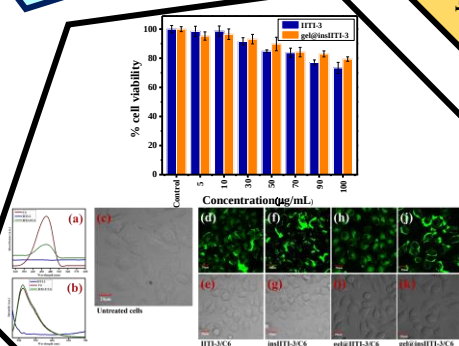
Synthesis of H₄L



INS loading and Release



Biocompatibility assay and cellular uptake study



INS release at different pH and CD spectra

