

## Controlled release of pyrimidine compound using polymeric coated zif-8 metal-organic framework as glucagon-like peptide-1 receptor agonist carrier

Ruba Fouad Al-Ajeil

United Arab Emirates University, UAE



### Abstract

This work demonstrates synthetic strategies for the incorporation of a synthesized pyrimidine glucagon-like peptide-1 (GLP-1) agonist into alginate-coated ZIF-8. The prepared pyrimidine GLP-1 agonist used for the treatment of diabetes type II, was trapped inside polymer coated ZIF-8. The encapsulation of the GLP-1 agonist was confirmed by UV-visible and FT-IR spectroscopies. Furthermore, the release kinetics of GLP-1 agonist drug from alginate-coated ZIF-8 were investigated in phosphate-buffered saline at 37 °C at pH 8 and 1.5. The alginate-coated ZIF-8 exhibited much faster drug release at basic pH than at pH 1.5, indicating the potential of the alginate-coated ZIF-8 system to overcome the fast degradation at acidic pH of the stomach and improve the drug's activity. This study may open the way for the synthesis of new metal organic frameworks (MOFs) to enhance drug delivery systems.

University in addition to being appointed as the President of the Chemistry club at UAE University from 2018 to 2020. Her research interests include the synthesis, characterization and analysis of Metal-Organic Frameworks for the emergence of advanced and adequate applications from drug delivery systems to catalysis.

### Speaker Publications:

1. "Synthesis, Characterization, and Antioxidant Activity of Some 2-Methoxyphenols derivatives"

[21<sup>st</sup> World Conference on Pharmaceutical Chemistry and Drug Design](#); Webinar, December 16, 2020.

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### Biography:

Ruba Fouad Al-Ajeil received a Bachelor of Science Degree in Chemistry from the United Arab Emirates University in 2020. She was part of six research projects in the Summer Undergraduate Research Experience program (SURE Plus) at UAEU and was from the dean's list since 2017. Her participations include the 7<sup>th</sup> UAE Undergraduate Research Competition at Abu Dhabi University, the 5<sup>th</sup> annual Undergraduate Student Research Conference at UAE