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Synthesis of natural macroporous sporopolline exine capsules extracted from *Phoenix dactylifera* L. and their application in oral colon-specific delivery of Ibuprofen

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In this work, we have extracted Sporopollenin Macroporous Capsules (SMC) from date palm (*Phoenix dactylifera* L.) spores which were further coated by natural polymer composites (chitosan with glutaraldehyde). The polymer coated capsules were used in the *in vitro* controlled delivery of ibuprofen. Characterization of the materials were performed by SEM, XRD and nitrogen adsorption-desorption isotherms together with spectral and thermal analyses. Effect of various factors such as pH, temperature and initial concentration was seen on the ibuprofen releasing. The loading of ibuprofen increased by decreasing its concentration and followed the Langmuir adsorption isotherm. pH 6.0 was found to be the most favorable pH for the loading of ibuprofen at which 97.2% (50 mg/ml) drug was loaded to the capsules. The release of ibuprofen was faster when the pH was changed from 1.4 to 7.4. Cytotoxicity results of SMC and its capsules were also tested against human intestinal Caco-2 cell line using MTT assay which has shown that all the materials in the study were biocompatible.

Biography

Hamad A Al-Lohedan has more than 36 years of extremely active and productive career in the field of surfactant and polymer chemistry. After finishing his MSc in Organic Chemistry in 1979 from University of California, USA, he joined research and obtained PhD from the same University in 1981. He worked in the field of physical organic chemistry involving the role of surfactant on the rate of organic reactions. His current research interests include drug delivery formulations using biocompatible substances, drug-protein interactions, nanomaterials synthesis, corrosion inhibition by surfactants. He has authored more than 120 research publications.

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