ALLICIN RELEASE FROM ZIRCONIUM OXIDE NANOPARTICLES
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Allicin is a metabolite present in garlic and plants of the family Alliceas. This compound is extremely unstable and it decomposes in sulfides, including ajoene and dithiins. Allicin has been shown to have antimicrobial properties. Due to its instability it is advisable to support the allicin on a carrier material in order to protect it. Some materials have been studied for the conservation of the active phase of allicin by encapsulation of the metabolite in various materials. Ceramic materials as carriers for drug released in many medical applications has been extensively reported, however they have not been tested as drug delivery of this compound (allicin).

In this work nanomaterials of zirconium oxide has been synthesized, using zirconium (IV) propoxide and Tween 20. The synthesis was performed by the ultrasound-assisted sol-gel technique. The obtained ZrO₂ materials were characterized by X-ray Diffraction (XRD), Infrared Spectroscopy (IR), Scanning Electron Microscopy and Energy Dispersive X-ray Analysis (SEM/EDAX). The results revealed the formation of ZrO₂ nanoparticles with mesoporous structure and the crystalline phase was tetragonal. Released kinetics was carried up using synthetic gastric and intestinal fluids. The allicin released was detected by UV-VIS spectroscopy. The results confirm that this material is an option for encapsulation of allicin.

Keywords: Zirconium dioxide, release, allicin

References:

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