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Title:	Chitosan nanoparticles as a biocompatible and efficient nanowagon for benzyl isothiocyanate
Authors:	Kumar, Rajendra (/jspui/browse?type=author&value=Kumar%2C+Rajendra)
Keywords:	Benzyl isothiocyanate Chitosan Haemolysis Stability Antimicrobial
Issue Date:	2018
Publisher:	Elsevier B.V.
Citation:	International Journal of Biological Macromolecules, 115, pp. 18-28
Abstract:	<p>A plethora of evidences support the health benefits of a sulfur containing compound called Benzyl Isothiocyanate. However, its therapeutic application is limited due to its low solubility, poor stability and inadequate bioavailability. The problem has been worked upon and resolved by the synthesis of biodegradable nanoparticles using chitosan as the controlled delivery nanowagon. The prepared nanoparticles have been characterized using UV-visible absorption spectroscopy, IR spectroscopy, XRD, TGA, TEM and FE-SEM. Results reveal that loading of benzyl isothiocyanate into chitosan nanoparticles increases its solubility and stability. The maximum encapsulation efficiency was obtained to be $64.68 \pm 4.7\%$ with slow and sustained release of 77.78% in 144 h at pH 5.5. Clear enhancement in the stability of benzyl isothiocyanate that is sensitive to ultraviolet light has been showcased after its encompassment in the cationic polymer. Further the biosafety of the fabricated system has been demonstrated by haemolysis and its interaction with biomolecules. The antimicrobial activity connotes that the prepared nanoparticles can act as a useful and safe carrier for the loading of benzyl isothiocyanate making it a promising formulation for biological applications in future.</p>
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