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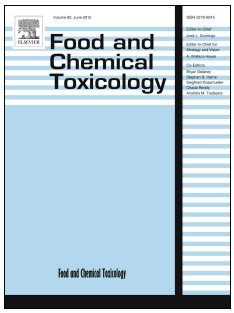

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Supramolecular formulation of nitidine chloride can alleviate its hepatotoxicity and improve its anticancer activity

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Abstract

Nitidine chloride (NC) has demonstrated promising anticancer activity. However, NC has also shown non-specific toxicity in various healthy organs such as the liver. In this study, we aimed to develop a supramolecular formulation for NC and investigate the associated benefits of such a supramolecular formulation on modulating its inherent hepatotoxicity and anticancer activity. The formation of NC-cucurbit[7]uil (NC@CB[7]) complexes was characterized by ^{1}H nuclear magnetic resonance and Fourier transform infrared spectroscopy, differential scanning calorimetry and powder X-ray diffraction analysis. As a consequence of supramolecular complexation, NC@CB[7] showed significantly lower toxicity (IC_{50}: 6.87±0.80 μM) on a liver cell line (LO2), and higher cytotoxicity (IC_{50}: 2.94 ±0.15 μM) on a breast cancer cell line (MCF-7), when compared with the free drug (IC_{50} of