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β -casein nanovehicles for oral delivery of chemotherapeutic drug combinations overcoming P-glycoprotein-mediated multidrug resistance in human gastric cancer cells

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Multidrug resistance (MDR) is a primary obstacle to curative cancer therapy. We have previously demonstrated that β -casein (β -CN) micelles (β -CM) can serve as nanovehicles for oral delivery and target-activated release of hydrophobic drugs in the stomach. Herein, we introduce a novel nanosystem based on β -CM, to orally deliver a synergistic combination of a chemotherapeutic drug (Paclitaxel, PTX) and a P-glycoprotein-specific transport inhibitor (Tariquidar TQD) individually encapsulated within β -CM, for overcoming MDR in gastric cancer. Light microscopy, dynamic light scattering and zeta potential analyses revealed solubilization of these drugs by β -CN. Cytotoxicity (in terms of IC₅₀ values) of PTX and PTX+0.8 μ M suppressing drug crystallization. Spectrophotometry demonstrated high loading capacity and good encapsulation TQD, with and without -CN encapsulation following simulated efficiency, whereas spectrofluorometry revealed high affinity of gastric digestion, examined using EPG85-257P, parental cell line these drugs to β -CN. *In vitro* cytotoxicity assays exhibited and EPG85-257RDB multidrug resistant subline

Biography

Yoav D Livney has completed his/her BSc (Suma cum Laude, 1990) in Food Engineering & Biotechnology, Technion Israel Institute of Technology; MS (1995) in Food Engineering, UW Madison, Wisconsin, USA; PhD (2002) in Food Engineering & Biotechnology Technion IIT and; Post-Doc Food Science, University of Guelph, Canada. He/She served as Lecturer (2004), Asst. Professor (2007), Assoc. Prof. (2012) and is an expert in physical chemistry of biopolymers, and nano-delivery systems for nutraceuticals and drugs. He/She has authored >50 publications, 8 patents, gave >35 invited talks at international conferences, and mentored 13 MSc and 7 PhD students. He/She is serving as the Editorial-Board Member in several reputed journals.

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