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ABSTRACT BOOK

RESVERATROL-LOADED NANOPARTICLES BASED ON POLYMERIC BLEND FOR PROSTATE CANCER TREATMENT

Vanna Sanna,[1,2] Imtiaz A. Siddiqui,[2] Mario Sechi,[1,2] Hasan Mukhtar[2]

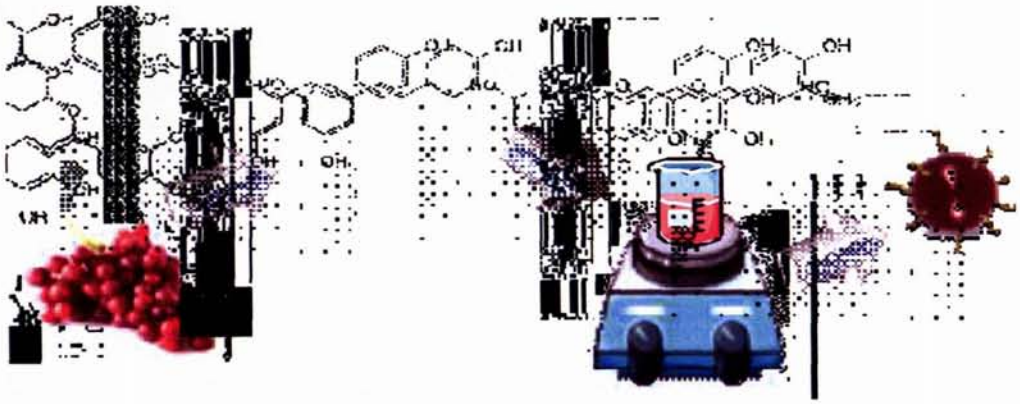
[1]Department of Chemistry and Pharmacy, Laboratory of Nanomedicine, University of Sassari, Sassari, Italy

[2]University of Wisconsin-Madison, Madison, WI

The trans-resveratrol (RSV) has been reported to act as an antiproliferative and chemopreventive agent against a wide variety of tumors, including prostate cancer (PCa)[1,2]. Nanoencapsulation of RSV represents a powerful strategy to provide protection of degradation, enhancement of bioavailability, improvement of intracellular penetration and control delivery[3,4].

We developed novel polymeric nanoparticles (NPs) encapsulating RSV (nano-RSV), based on a polymeric blend, as effective prototypes for PCa treatment. NPs were characterized in terms of morphology, encapsulation efficiency, and in vitro release studies. Moreover, cellular uptake and antiproliferative efficacy of nano-RSV in PC-3, DU-145, and LNCaP cell lines, were evaluated.

RSV was successfully loaded in NPs with an average diameter of 150 nm and encapsulation efficiencies ranging from 74% to 98%. NPs are able to control the RSV release at pH 6.5 and 7.4, with only 55% of RSV released within 7 h. On the other hand, in gastrointestinal simulated fluids, NPs released about 55% of RSV in the first 2 h in acidic medium, and their total RSV content within the subsequent 5 h at pH 7.4. Confocal fluorescence microscopy revealed that NPs were efficiently taken up by PCa cell lines. Furthermore, nano-RSV significantly improved the cytotoxicity than that of free RSV in all tested cell lines, both at 10 μM and 20 μM concentrations. Our results support the potential use of these prototypes for the controlled delivery of RSV for PCa treatment.



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