

Photodynamic Therapy on Prostate Cancer by Using New Photosensitizers, Protoporphyrin IX-Polyamine Derivatives

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To determine potential mechanisms by which PpIX-PA (protoporphyrin IX-polyamines; PpIX is coupled with two molecules of spermidine (PpIX-dSd) or spermine (PpIX-dSm)) inhibited prostate cancer cell viability, we studied its effects on mitochondrial membrane potential because alterations in mitochondrial structure and function have been shown to play a crucial role at early stages of apoptosis.

PpIX-PA induced apoptosis via the intrinsic pathway in prostate cancer cell lines PC-3, DU 145 and LNCaP. Cells were cultured in 10% FCS medium during 24 h, treated or not with PpIX-PA (IC₅₀) for 24 h, treated or not with NAC (10 mM) and irradiated (RI) or not (NI) by red light (75 J/cm²). After 24 h, cells were incubated with medium containing JC-1 (1 µg/ml) for 30 min at 37°C. Red fluorescence represents mitochondria with intact membrane potential whereas green fluorescence represents de-energized mitochondria. Pictures were taken with a confocal microscope (laser Zeiss LSM 510 Meta – x200). The pictures are representative of two separate experiments (As shown in Figure).

