PC-3 Prostate Cancer Cells Necrosis Promoted by Simvastatin is Prevented either by L-Carnitine or Piracetam

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L-carnitine is a cofactor in the channeling of fatty acids inside the cell. It plays two major functions in the cell: it is involved in fatty acid oxidation as it acts as a cofactor in the transport of acyl groups across the inner mitochondrial membrane and it also removes acyl groups from the mitochondria and the cell as acylcarnitines. Piracetam is used as chemical "nootropic". It improves the brain functions involved in processes of learning, memory, attention and consciousness. The present work was intended to evaluate the protection by L-carnitine or piracetam against cell necrosis promoted either by simvastatin or tert-butyl-hydroperoxide (t-BOOH). Both simvastatin and t-BOOH causes mitochondrial permeability transition (MPT) followed by cell necrosis. Cell necrosis was measured by tripan blue and flow cytometry techniques. Both L-carnitine or piracetam protected against simvastatin or t-BOOH induced cell death via a concentration dependent mechanism (1-12 μM). Similary to cyclosporin A L-carnitine and piracetam protected against mitochondrial membrane potential disruption induced by simvastatin or t-BOOH. We may conclude that these compounds protected against PC-3 prostate cancer cell necrosis via inhibition of MPT.

Keywords: L-carnitine, piracetam, PC-3 prostate cancer cells, simvastatin.

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