Pro-oxidant Effects of Resveratrol and its Implications on Viability and Proliferative Status in the GRX Cell Line

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Continuous liver injuries generate stimuli, mediated by cytokines and reactive oxygen species (ROS), which trigger the activation of hepatic stellate cells (HSC) to become collagen α1-(1) producing myofibroblasts, responsible for fibrosis. The GRX cell line is representative of HSC. Resveratrol (RSV; 3,4',5-tri-hydroxy-*trans*-stilbene) is a phytoalexin produced by some species of plants. Several beneficial effects are attributed to RSV due to its antioxidant properties, although its possible pro-oxidant effect has been put into discussion recently. The aim of this study was to evaluate some effects of RSV on oxidative stress parameters of GRX cells. We report here that 50 μM of RSV induced a pro-oxidant effect leading to a decreased cell viability and proliferation of GRX cells during the first 24 hours of treatment; these alterations were attenuated during 120 hours of exposure. At 120 hours, an increased DCF fluorescence and SOD activity was observed, as well as decreased CAT activity, in the 50 μM RSV-treated group, leading to an imbalance in the ratio of both enzymes and possibly resulting in an over-production of H_2O_2. The cells that received 50 μM RSV presented oxidative damage, determined by lipoperoxidation, at 24 and 120 hours, but some of these parameters were lower in the chronic model. These data demonstrate a pro-oxidant and toxic effect of RSV treatment which in turn generates an adaptation of the GRX cells.

Key words: hepatic stellate cells, liver fibrosis; GRX; Resveratrol; Pro-oxidant; Oxidative Stress

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