

Hydrogen Peroxide and Quercetin Induced Changes on Cell Viability, Apoptosis and Oxidative Stress in HepG2 Cells

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Background: Different cellular responses influence the progress of cancer. In this study, the effects of hydrogen peroxide and quercetin induced changes on cell viability, apoptosis, and oxidative stress in human hepatocellular carcinoma (HepG2) cells were investigated.

Methods: The effects of hydrogen peroxide and quercetin on cell viability, cell cycle phases, and oxidative stress related cellular changes were investigated. Cell viability was assessed by WST-1 assay. Apoptosis rate, cell cycle

phase changes, and oxidative stress were measured by flow cytometry. Protein expressions of p21, p27, p53, NF- κ B-p50, and proteasome activity were determined by Western blot and fluorometry, respectively.

Results: Hydrogen peroxide and quercetin treatment resulted in decreased cell viability and increased apoptosis in HepG2 cells. Proteasome activity was increased by hydrogen peroxide but decreased by quercetin treatment.

Conclusion: Both agents resulted in decreased p53 protein expression and increased cell death by different mechanisms regarding proteostasis and cell cycle phases.

Keywords: HepG2 cells, oxidative stress, hydrogen peroxide, quercetin, apoptosis, cell cycle.