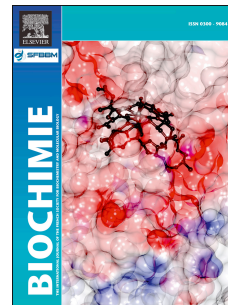


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Cellular mechanism of resistance of human colorectal adenocarcinoma cells against apoptosis-induction by Russell's Viper venom L-amino acid oxidase (Rusvinoxidase)

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Abstract

The present study highlights the cellular mechanism of resistance in human adenocarcinoma (Colo-205) cells against apoptosis induction by Rusvinoxidase, an L-amino acid oxidase purified from Russell's Viper venom (RVV). The significantly lower cytotoxicity as well as apoptotic activity of Rusvinoxidase towards Colo-205 cells (compared to MCF-7 breast cancer cells) is correlated with lower depletion of cellular glutathione content and increased down-regulation of catalase activity of Colo-205 cells following Rusvinoxidase treatment. Exposure to Rusvinoxidase subsequently diminished reactive oxygen species (ROS) production and failed to impair mitochondrial membrane potential, resulting in apoptosis induction resistance in Colo-205 cells. Further, higher expression levels of caspase 8, compared to caspase 9, indicate that Rusvinoxidase preferentially triggers the extrinsic pathway of apoptosis in Colo-205 cells. A time-dependent lower ratio of the relative expression of Bax and Bcl-xL (pro- and anti-apoptotic proteins) in Colo-205 cells, compared to our previous study on MCF-7 cells, unambiguously supports a higher cellular resistance mechanism in Colo-205 cells against Rusvinoxidase-induced apoptosis.

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