

## Induction of Apoptosis and Autophagy by Resveratrol via Activation of AMPK Pathway in 5-Fluorouracil-Resistant Colon Cancer Cells

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Resveratrol is a polyphenolic compound, which is a naturally occurring phytochemical and is found in a variety of plants, including food such as grapes, berries and peanuts. Although several studies have demonstrated that resveratrol possesses anti-cancer activity against various types of human cancer, the molecular mechanisms of resveratrol-mediated overcome drug resistance potential are unclear. In this study, we determined whether resveratrol attenuates drug resistance responses in 5-fluorouracil-resistant colon cancer (SNUC5/5-FUR) cells. Treatment with resveratrol significantly enhanced apoptosis in a concentration-dependent manner, which was associated with the modulation of anti- and/or pro-apoptotic protein expression, activation of caspases and activation of AMP-activated protein kinase. Resveratrol treatment also increased the induction of autophagy through up-regulation of autophagy-related genes such as Microtubule-associated protein 1A/1B-light chain 3, P62 and beclin-1. However, blocking of autophagy by bafilomycin A1 reduced apoptotic cell death, suggesting that resveratrol-induced autophagy functions as a cell death mechanism in SNUC5/5-FU cells. Although the further studies are needed, these findings suggest that resveratrol may have therapeutic potential to overcome drug resistance in colon cancer patients

Key words: 5-FU, AMPK, Autophagy, Colon cancer, Resveratrol

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