



## Role of Quercetin: Apoptosis vs. Cancer

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**ABSTRACT:** Quercetin is a widely distributed naturally occurring flavanoid which has anti-oxidative properties and have shown effect on apoptosis in normal as well as cancerous cells and has been reported to lower the risk of several cancers. It also possesses anti-proliferative effects against various malignant cells. The mechanism associated with the induction of cell death accompanied by caspase-mediated DNA fragmentation and enhanced  $H_2O_2$  production in undifferentiated PC12 cells. Quercetin was also found to suppress proliferation of human HCC cell line (BEL-7402, HuH-7 and HLE) which has a recombinant adenovirus vector expressing the human p53, GM-CSF and B7-1 genes. It shares structural homology with the commercially available selective PI3K inhibitor, LY 294002 and pharmacologically safe doses of quercetin inhibit the PI3K-Akt/PKB pathway in the same way similar to that of the commercially available LY. On priming H-520 cells with quercetin increased cisplatin induced apoptosis by 30.2%. Quercetin decreases the level of IGFs, this could be due to the increased levels of IGFBP-3 and because of the high binding affinity towards IGFs thus decreasing the cell proliferation. Increased level of IGFBP-3 can be associated with increased pro-apoptotic proteins and apoptosis in response to quercetin, therefore it may be a p53-independent effector of apoptosis in prostate cancer cells. Based on these findings, it can be concluded that quercetin might act as an effective anticancer agent. This review is focused on the effect of quercetin on pathways involved in apoptosis and its implications. © 2014 iGlobal Research and Publishing Foundation. All rights reserved.

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