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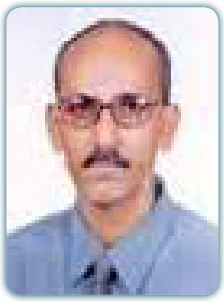

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Differential effects of crocin (saffron) on autophagy-mediated cell death in colorectal cancer cells

Colorectal cancer is among the leading causes of death worldwide. Here, the molecular mechanism of crocin-induced apoptosis in colorectal cancer cells was investigated. Crocin was shown here to inhibit proliferation of both HCT wildtype and HCT p53-/- cell lines at a concentration of 10 mM. Flow cytometric analysis of cell cycle distribution revealed that there was an accumulation of HCT wildtype cells in G1 compared to the control after 24 and 48 hours of crocin treatment, respectively. However, crocin induced only mild G2 arrest in HCT p53-/- after 24 hours. Crocin induced apoptosis in both cell lines in a time dependent manner. Nevertheless, p53 deficient cells were not able to repair the damage induced by crocin. Crocin induced inefficient autophagy in HCT p53-/- cells where crocin induced the formation of LC3-II which was combined by a decrease in the protein levels of beclin 1 and Atg7 and no clear p62 degradation. Autophagosome formation was not detected in HCT p53-/- after crocin treatment predicting a nonfunctional autophagosome formation. There was a significant increase of p62 after treating the cells with bafilomycin A1 (Baf) and crocin compared to crocin exposure alone, indicating an effective autophagic flux. Annexin V staining showed that Baf-pretreatment enhanced the induction of apoptosis in HCT wildtype cells. Baf-exposed-HCT p53-/- cells did not show any enhancement of apoptosis induction despite an increase in the DNA damage sensor accumulation, γH2AX indicating that crocin induced an autophagy-independent classical programmed cell death.

Biography

A Amin has completed his PhD at University of Illinois at Chicago, and received a post-doctoral training in the field of molecular genetics at the University of Pennsylvania School of Medicine. He started his academic career at UAE University where he serves now as a Full Professor of Cell Biology. His research focuses on ways to control cancer, particularly liver cancer. He published many research articles and reviews and serves as reviewer and as an editorial member of many specialized peer-reviewed journals. He is also a member of many specialized societies and the sole recipient of many scientific awards.

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