

# Preface

The mitochondrion, an organelle within cells, has long been considered to be the powerhouse of the cell because of its central role in energy production. However, in the last two decades it has become clear that mitochondria also play a key role in cell survival and cell death. More recent findings further implicate a broader perspective on the role of mitochondria in multiple cellular signaling. Defects in mitochondria are associated with the genesis of multiple diseases, including cancer. One of the key functions of mitochondria is to induce cell death in multiple types of cells under physiological or environmental stresses. However, their cell-death-inducing function may be defective in cancer, causing survival and proliferation of cancer cells. Although one of the drawbacks of current cancer therapy is resistance to cell death as a result of defective mitochondrial pathways, these defects provide an opportunity to target tumor mitochondria selectively to induce cancer cell death. Selectively targeting tumor mitochondrial pathways may also decrease toxicity to normal tissues possessing normal functional mitochondria, and thus further enhance therapeutic efficacy.

During the last decade there has been significant emphasis on preventing or curing cancer with natural remedies involving the use of naturally derived phytochemicals, which possess anticancer properties with minimal toxicity. Although further studies are warranted, significant progress has been made investigating the role of mitochondria in controlling cancer cell death and proliferation in response to phytochemicals. This book describes the current status of the impact of phytochemicals on cancer cell death and survival. The key role of mitochondria in cancer prevention and therapy is also illustrated. The book contains contributions from multiple researchers working in the areas of cancer, phytochemistry, and mitochondria. This comprehensive collection of information will be useful to a broadbased audience with a focus on cancer research, prevention, and treatment.

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Prevention and Therapy

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