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Topic of Research: “Therapeutic potential of SMAC mimetic compounds targeting cell death mechanisms of apoptosis and autophagy”

FINDINGS

Therapeutic resistance and reoccurrence after chemotherapy are the major cause of death in cancer patients. In various studies, it has been seen that the inhibitory apoptotic proteins (IAPs) levels and autophagy gets upregulated and contribute to resistance to chemotherapies. This study is an investigational study, illuminating the efficacy of SMAC mimetic compounds. For the first time, our study displayed the efficacy of SMAC mimetic compound on autophagy mechanism and response to the problem of conventional drug resistance in current therapies in breast cancer. In our study, MCF7 showed upregulated IAPs and autophagy proteins expression compared to MCF10A. Treatment of SMAC mimetic BV6 and AT101 effects the viability of MCF7 cancer cell lines and shows cytotoxicity in a concentration-dependent manner. The SMAC mimetic compounds displayed promising anti-cancer effects in MCF7 breast cancer cell lines through the induction of apoptosis and downregulation of IAPs. Further, the autophagy analysis concludes that SMAC mimetic BV6 decreases the factors which are involved in developing resistance against various anticancer conventional therapies. i.e., Inhibitors of Apoptosis (IAPs) and autophagy, whereas, AT101 upregulates autophagy. The study provides a potent therapeutic target for the development of novel anti-cancer drugs/SMAC mimetics and to overcome the problem of resistance and reoccurrence.

