

## 2007 Ohio Student Research Forum

Wright State University  
Dayton, OH

## RESEARCH ABSTRACT FORM

**TITLE:** Effect of Novel Cell Death Inhibitors on Apoptosis**AUTHOR:** Chanel Hagler**MENTOR(S):** Dr. Thomas L. Brown**INSTITUTION:** Wright State University

Apoptosis is essential for the maintenance of homeostasis. Increased apoptosis has been associated with diseases such as diabetes and AIDS, whereas a decrease in levels of apoptosis has been associated with cancer.

Apoptosis is the process of cell death in which a cell terminates itself through a specific order of events. These events include caspase activation, substrate cleavage, a lack of an inflammatory response, formation of apoptotic bodies and DNA laddering. Apoptosis occurs after receiving a signal and can occur when the cell is injured or being invaded by a virus.

There are currently a number of experimental compounds (ZVAD-fmk and Boc-D-fmk) that inhibit apoptotic cell death, but are toxic to cells in higher doses. This study tests the effectiveness of novel drugs in inhibiting cell death while remaining nontoxic to cells.

Human T-cells (Jurkat cells) were treated with experimental drugs: Boc-D-OPh, Z-D-OPh, Q-D-OPh, Boc-VD-OPh, Z-VD-OPh, Q-VD-OPh(OMe), and Q-VD-OPh (no OMe). The cells were subsequently treated with Actinomycin D, which is known to induce apoptosis in Jurkat cells. DNA laddering assay was used to determine the effectiveness of the test compounds.

Our results indicate the drugs that contained VD were more effective at inhibiting cell death at lower dose than those that contained D only.

The drug that was methylated was less effective in inhibiting cell death, whereas the non-methylated was more effective. Our data also suggest that Q-VD-OPh (no OMe) was most effective.

Our data suggest that N-terminal protecting groups, amino acid composition, and methylation state alter the effectiveness of peptide-based cell death inhibitors.