

## **ABSTRACT**

**THESIS:** Aberrant Expression of TAL-1 Increases Resistance to Apoptosis in T-cell Acute Lymphoblastic Leukemia.

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T-cell acute lymphoblastic leukemia (T-ALL) is a lymphoid disorder that results from an over proliferation of immature lymphocytes in the blood and bone marrow. It has been determined that 60% of patients stricken with T-ALL aberrantly express TAL-1 and have been shown to respond poorly to chemotherapy. This research sought to determine if TAL-1 influences the expression of the Bcl-2 family members Bcl-2 (anti-apoptotic), Bad and Bax (pro-apoptotic). TAL-1 and Bcl-2 levels were elevated while Bad and Bax levels were lower in etoposide-treated Jurkat cells as compared to TRAIL-treated and dual-treated Jurkat cells in which TAL-1 and Bcl-2 levels were lower while Bad and Bax levels were elevated. These results suggest TAL-1 up-regulates Bcl-2 and suppress Bad and Bax expression in response to etoposide treatment, thus inducing an anti-apoptotic response in the cell. These results also suggest that TRAIL and the dual treatment of etoposide and TRAIL down-regulates TAL-1 and Bcl-2 expression while up-regulating Bad and Bax, thus inducing a pro-apoptotic response in the cell.