**Abstract**

Background**:** Acute myeloid leukemia (AML) and Myelodysplastic diseases (MDS) are malignancies that develop as a result of dysregulation in the process of differentiation and specialization in hematopoietic stem cells. Both afflictions have been found to result in an overexpression of the chemokine Interleukin-8 (IL-8). With the release of an IL-8 inhibitor for clinical use by Cormorant Pharmaceuticals, a new approach to removing malignancies and combating AML has opened up. In this study, the use of Humax IL-8 antibodies in combination with the chemotherapeutic cytosine arabinoside (Ara-C0 are evaluated to determine if an increased facilitation of apoptosis can be achieved.

Methods**:** The evaluation of Humax IL-8 was performed using the human cell line THP1 as an in-vitro model of AML. The cells were seeded in 96 well plates and specialized dosing regimens were constructed to best induce apoptosis in the THP-1 cells. Two assessments were conducted to evaluate the abilities of the Humax IL-8: a flow cytometry (apoptosis assay) and a proliferation assay. In combination, the two modes of evaluation were used determine the stage of cell life that the THP-1 cells were in after treatment under the dosing schedule. The results were categorized into four distinct phases of cell life: viable, early apoptosis, late apoptosis, and necrosis. All results were compiled to determine whether Humax IL-8 alone, in combination with Ara-C or Ara-C was the best treatment method to facilitate apoptosis.

Conclusions**:** Humax IL-8 alone inhibited proliferation of THP1 cells. In addition, Ara-C potentiated Humax IL8Ab-induced apoptosis of THP1 cells. THP1 cells treated with Humax IL8Ab had lower levels of viable cells and higher levels of apoptotic and necrotic cells compared to the control samples treated with IgG-ab and untreated cells. Overall, Humax IL-8 in combination with Ara-C yielded the best results in the facilitation of apoptosis and pursuing research in Humax IL-8 as a treatment for AML looks promising for an ultimate successful therapy