LJI Available Technologies

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α-Galactosyl Ceramide Analogs

Researchers at the La Jolla Institute for Immunology have developed α-galactosyl ceramide (αGalCer) analogs, termed sphingamide compounds, that can inhibit iNKT cell activation. These compounds bind the TCR of iNKT cells with high affinity but do not activate mouse iNKT cells *in vitro* or *in vivo*.

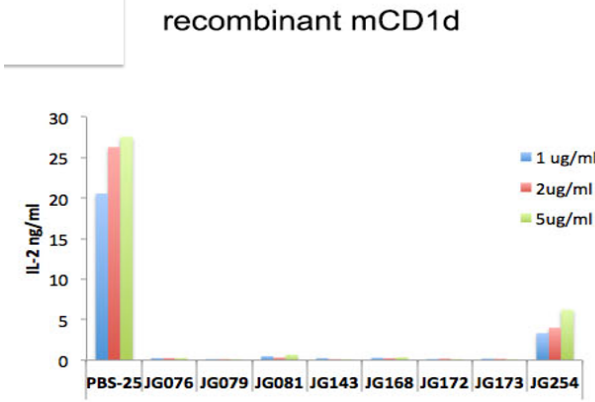
iNKT cells are an evolutionarily conserved population of T cells that are activated by CD1d-presented glycolipids such as the prototypical antigen αGalCer. They rapidly produced copious amounts of both Th1 and Th2 cytokines, and thus can contribute to autoimmunity. While there are glycolipids currently being designed that skew the immune system towards either a Th1 or Th2 response, glycolipids that can inhibit iNKT cell activation are not currently available. So far, only glycolipids that can poorly compete with αGalCer for CD1d binding exist. These lipids, however, do not bind the TCR of iNKT cells and, consequently, are less potent in preventing iNKT cell activation by CD1d-presented antigens. As such, it would be advantageous to develop αGalCer analogs that bind the TCR of iNKT cells to robustly inhibit iNKT cell activation by CD1d-presented antigens.

Researchers at LJI have done just that. They have developed αGalCer analogs capable of binding the TCR of iNKT cells with high affinity. These compounds, however, do not activate iNKT cells *in vitro* or *in vivo*. As such, they are potent iNKT cell inhibitors that can be used as therapeutics to prevent the activation of iNKT cells in cases where excessive Th1 or Th2 cytokine production is harmful.

ADVANTAGES:

- **Inhibit iNKT cell activation**
- **Bind the TCR of iNKT cells with high affinity**
- **Do not activate iNKT cells *in vitro* or *in vivo***

α-GalCer analogs that inhibit iNKT cell activation



αGalCer analogs, termed sphingamides, do not activate iNKT cells in vitro

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