

Non-glycosidic analogues of α -GalCer as NKT cell activators

CSIC has developed novel non-glycosidic analogues of alpha-galactosylceramide (α -GalCer) that induce proliferation of natural killer T (NKT) cells, involved in immune responses. These compounds are versatile modulators of cytokine production and induce a strong and efficient immunitary response. They have potential as drugs in single therapy or as adjuvants for vaccine, antibody or cell immunotherapies in cancer, infections or autoimmune diseases.

Industrial partners are being sought to collaborate through a patent licence agreement.

An offer for Patent Licensing and/or R+D collaboration

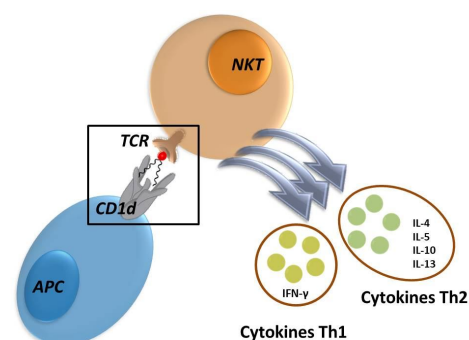
Selective modulation of cytokines release

Invariant natural killer T cells (iNKT), a unique subpopulation of T cells with immunomodulatory properties involved in a broad range of immune responses, are stimulated by glycolipid antigens, particularly by alpha-galactosylceramide (α -GalCer).

Due to the exceptional potency of α -GalCer on iNKT cell stimulation that simultaneously induces the expression of Th1 and Th2 cytokines, with opposite functions and the subsequent side effects, new compounds are needed to achieve selective modulation of cytokine release.

A new family of non-glycosidic analogues of α -GalCer has been developed. These non-glycosidic derivatives have shown a strong activity *in vitro* to stimulate iNKT cells by inducing cytokine release. The compounds have shown activity in human iNKT cell stimulation.

Due to the role of iNKT cells, these compounds can have application in cancer immunotherapy for cooperative stimulation of the patient immune system and as vaccine adjuvants in autoimmune diseases or infections.



Immune response produced by NKT cells after external activation.

Main advantages and applications

- Replacement of the galactose moiety by a non-glycosidic group avoids degradation by cellular glycosidases, conferring a longer half life and therefore sustained effects.
- These analogues can modulate Th1/Th2 induced cytokine production, promoting selectively Th2 or Th1 synthesis depending on the chemical diversity introduced.
- Defined mechanism of action, involving CD1d presentation by antigen presenting cells and stimulation of NKT cell proliferation.
- NKT cells are unconventional regulators of innate and adaptive immunity. Activation of iNKT initiates an adjuvant cascade that reinforces the innate immunity and promotes the subsequent adaptive immune response.

Patent Status

Spanish patent application filed

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