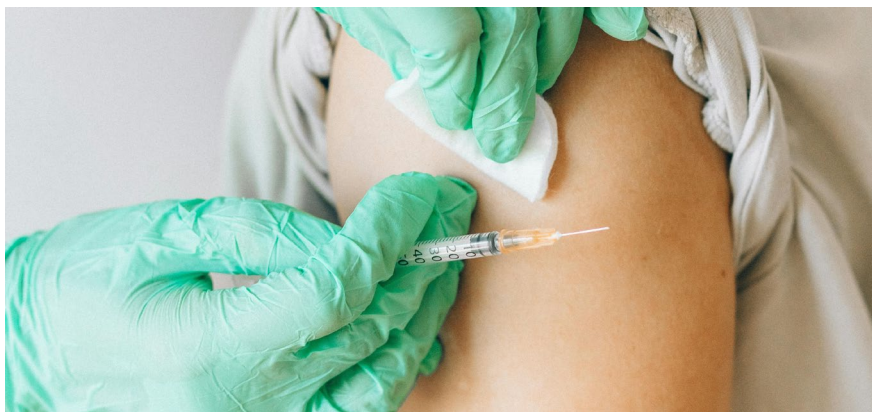


Technology Offer

CSIC/AH/043

New immunomodulatory glycolipids



New tiourea- and urea-based glycolipids with immunomodulatory activity. The compounds are Mincle agonist and have shown *in vitro* and *in vivo* immunostimulant activity. They can be used as vaccine adjuvants, in the modulation of the immune response and in the treatment of infectious disease or cancer.

Intellectual Property

EP priority patent application filed

Stage of development

In vivo proof-of-concept

Intended Collaboration

Licensing and/or co-development

Contact

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Market need

The macrophage-inducible C-type lectin (Mincle) is a transmembrane C-type lectin receptor (CLR) expressed on immune system cells such as macrophages and dendritic cells. The activation of Mincle initiates a signaling cascade leading to an immunostimulating effect

Over the past decade, many glycolipids have been synthesized as Mincle activators. However, most of them are too far reactogenic or toxic so cannot be used as therapeutic agents. Alternative Mincle agonists are needed to advance new vaccine adjuvants and therapeutics in the areas of infectious diseases, as well as autoimmunity and cancer.



CSIC solution

New carbohydrate derivatives behaving as agonists of the Mincle receptor in immune system cells have been identified using a reporter T-cell hybridoma that expresses Mincle and FcR γ as well as GFP (green fluorescent protein) under the control of the NFAT transcription factor.

The immunostimulant function of the compounds has been shown *in vitro* in different human and mouse cells.

Moreover, the ability of compounds to function as an adjuvant was assessed in a mouse model *in vivo*.

Competitive advantages

- The new compounds can elicit an inflammatory response both *in vitro* and *in vivo* and they represent a new class of Th1/Th17-inducing adjuvants.
- The incorporation of tiourea and urea connectors between the carbohydrate and the lipid moieties enables efficient and scalable preparation protocols.
- The compounds can be used as vaccine adjuvants, or in the modulation of immune response in a subject, or in the treatment of infectious diseases or in the treatment of cancer.