Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

NOD1/2 Immunomodulatory Agonists

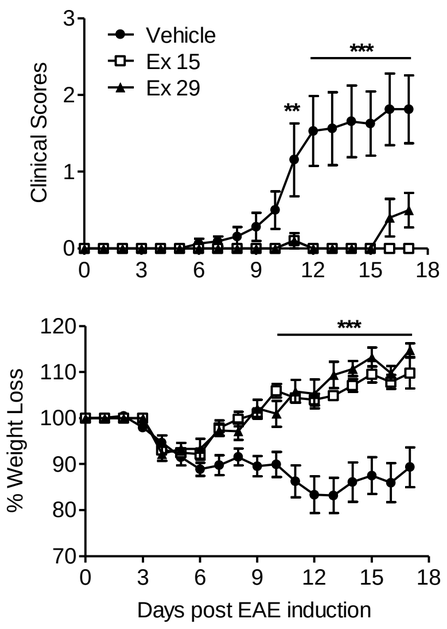
Therapeutic for Autoimmune disease

Overview

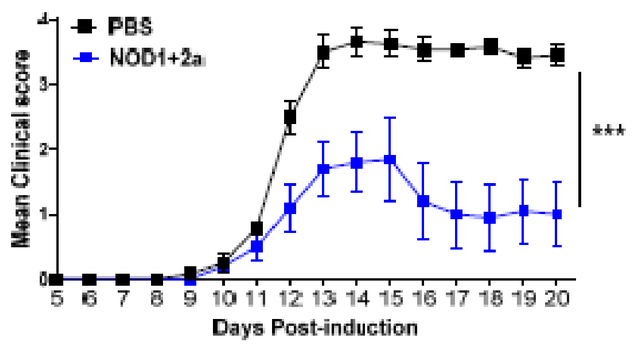
The technology offered by Trinity College relates to novel NOD modulators, particularly to NOD1 or NOD1 and NOD2 agonists, processes for their preparation, pharmaceutical compositions comprising these modulators and their uses in the treatment of conditions for which agonism of NOD receptors is beneficial including inflammatory autoimmune and/or inflammatory diseases, metabolic, infectious and cancer diseases.

Background

NOD1 and NOD2 are two members of the growing family of Nod-like receptors characterized by a nucleotide-oligomerization domain (NOD) and ligand-recognizing leucine-rich repeats. NOD1 and NOD2 are involved in the recognition of peptidoglycan (PGN), major surface component of Gram-positive bacteria. The innate immune receptors recognize specific molecules that are commonly found in microbes and induce host defense responses to eliminate invading pathogens. In light of the role NODs plays in the pathogenesis of diseases, it is desirable to prepare compounds that modulate NODs activity and hence have utility in the treatment of diseases mediated by NODs such as inflammatory, metabolic and autoimmune infectious and cancer diseases.



Experimental Autoimmune Encephalomyelitis (EAE) murine model- clinical scores and percentage weight loss following treatment with example NOD 1 compounds



Innate training with dual NOD1/2 agonists protects against CNS autoimmunity

Advantages

The advantage of NOD agonists is that there is no need to administer a broadly immunosuppressive agent, but a product that stimulates the body to make its own anti-inflammatory cytokines.

Furthermore, since cells of the innate and adaptive immune system that mediate inflammation also make these anti-inflammatory cytokines in vivo, they are more likely to be effective at the site of inflammation. This should allow for a more specific effect using a synthetic drug could be delivered by the oral route and may require less frequent administration. Thus improving improved patient compliance and be cheaper than existing therapies.

Another potentially major advantage of the approach is that there is the capacity to generate regulatory T cells specific for an antigen at the site of disease. The effect will be more localized and therefore less likely to result in global suppression, which causes side effects associated with other anti-inflammatory approaches.

Technology Status

The NOD1, NOD 2, and dual acting NOD1/2 agonists have demonstrated efficacy in murine Multiple Sclerosis and Ulcerative Colitis.

Prophylactic treating of mice through Innate immune training with dual acting NOD1/2 agonists - protects against CNS autoimmunity, in an adoptive model of EAE

NOD1/2 agonists may provide a novel treatment approach for autoimmue diseases

The opportunity

Trinity College Dublin are seeking to collaborate with and/or licence the technology for further research and development support to progress through to preclinical and clinical trials.

Market

Therapeutics: Synthesis, Formulation, Processing and Drug Delivery

IP Status

PCT/EP2015/066203 Application has been nationalised in US, EPO, JP and AU

Opportunity

Research collaboration

Available to License

Researcher(s)

Prof Kingston Mills & InvivoGen SAS

Contact

Dr. Emily Vereker,

Case Manager, Life Sciences

emily.vereker@tcd.ie

+353 1 896 4152

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