New Anti-Arthritis Compounds Utilizing Oligosaccharides as a Treatment Modality for Rheumatoid arthritis

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BACKGROUND

Rheumatoid arthritis (RA) is a lifelong, systemic autoimmune disease that affects women three times more frequently than men, often in their most productive and childbearing years. Pregnancy in women with RA poses a therapeutic challenge. Some anti-rheumatic drugs can cross the placenta and harm the fetus and/or are transferred into breast milk and harm the breastfed baby. Teratogenic compounds like methotrexate and leflunamide are to be avoided and high dose steroids may be associated with a premature rupture of the membranes. The high risk of drug transfer into breast milk often leads to the recommendation for women to cease breastfeeding.

While the exact cause of RA remains to be elucidated, it is known that chronic macrophage inflammation plays a key role in the development and progression of rheumatoid arthritis. The ability to attenuate macrophage inflammation and suppress the secretion of pro-inflammatory cytokines, like interleukin (IL)-1beta and IL-6 would help in the treatment of RA.

TECHNOLOGY DESCRIPTION

Researchers at UC San Diego have discovered that 3'-sialyllactose (3'SL) based oligosaccharides attenuate macrophage inflammation and suppress the secretion of pro-inflammatory cytokines, (IL)-1-beta and IL-6. This is based upon studies demonstrating that 3'SL exhibits anti-inflammatory effects in macrophages and alleviates paw swelling and cartilage damage in a collagen antibody-induced arthritis (CAIA) mouse model *in vivo*.

APPLICATIONS

3'SL would be administered to patients to reduce inflammation either as a direct agent or as an adjunct to existing therapies.

ADVANTAGES

3'SL is normally present in breast milk as well as in circulation, so administration of the oligosaccharide would not cause any harm to these vulnerable populations.

STATE OF DEVELOPMENT

Invention is in an experimental stage. *In vitro* efficacy in mouse and human cells has been confirmed. *In vivo* efficacy in mouse model has been confirmed.

INTELLECTUAL PROPERTY INFO

A provisional patent has been submitted and the technology is available to license.

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OTHER INFORMATION

KEYWORDS

Oligosaccharides, autoimmune, inflammation, Rheumatoid arthritis, 3'-sialyllactose

CATEGORIZED AS

- **Medical**
  - Disease: Autoimmune and Inflammation

RELATED CASES

2018-048-0

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Published Application	2019071021	04/11/2019	2018-048

Additional Patents Pending

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