Targeting Hyaluronan as an Immunomodulator for Treatment of Inflammatory Diseases

Tech ID: 29994 / UC Case 2018-136-0

BACKGROUND

Inflammatory bowel disease (IBD) is characterized by chronic inflammation of the gastrointestinal tract and has been associated with poor quality of life and frequent complications requiring hospitalization and surgical procedures. Current therapies for IBD typically target neutralization of inflammatory cytokines, blockade of receptors, or inhibition of inflammatory cell functions. Despite current approaches, it is still difficult to control disease severity and maintain quality of life. One important phenotype of IBD that may offer an opportunity for gaining increased understanding of the disease is that up to 40% of individuals with inflammatory diseases of the colon have extra intestinal manifestations. Foremost in these extra intestinal symptoms are skin or oral disorders such as erythema nodosum, pyoderma gangreneosum and aphthous stomatitis. The presence of diseases associated with IBD at sites far from the gut support several hypotheses that IBD is a systemic disorder of circulating bone marrow derived immunocytes, a consequence of dysbiosis of the microbiome or a generalized disorder of epithelial function. Furthermore, appropriate function of the epithelial barrier is necessary to regulate the interactions between microbes and the host and maintain health.

TECHNOLOGY DESCRIPTION

Researchers at UC San Diego have shown that there is a connection between adipogenesis and inflammation of the colon and skin. Adipogenesis occurs in the response of inflammation in the colon in a manner similar to that observed in the skin and the linkage between the two events is the role of hyaluronan in these processes. Hyaluronan (HA) is a glycosaminoglycan that is widely distributed in the extracellular matrix of many tissues and appears necessary for adopocyte maturation. In patients with IBD, HA accumulated around adipocytes. In contrast, the administration of soluble hyaluronidase inhibited adipogenesis and was able to suppress inflammation of both skin and colon.

APPLICATIONS

The administration of an HA-degrading enzyme can be used to treat inflammation in a variety of allergic conditions, primarily inflammatory diseases of the skin and gut. Digestion of HA has the potential to inhibit reactive adipogenesis after injury to the colon and skin and protect against inflammatory tissue damage.

ADVANTAGES

By simply changing the cell micro environment, the response of many kinds of immune cells can be regulated.

STATE OF DEVELOPMENT

Researchers have developed a preclinical model in mice.

INTELLECTUAL PROPERTY INFO

This technology is patent pending and available for licensing and/or research sponsorship.

RELATED MATERIALS

- Dokoshi T, Zhang LJ, Nakatsuji T, Adase CA, Sanford JA, PaladiniRD, Tanaka H, Fujiya M, Gallo RL Hyaluronidase inhibits reactive adipogenesis and inflammation of colon and skin. JCI Insight. 2018 Nov 2;3(21). pii: 123072. doi: 10.1172/jci.insight.123072. [Epub ahead of print] - 11/02/2018

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	0188420-A1	06/18/2020	2018-136

CONTACT

University of California, San Diego
Office of Innovation and Commercialization
innovation@ucsd.edu
tel: 858.534.5815.

OTHER INFORMATION

KEYWORDS

Autoimmunity, colitis, dermatitis, immunomodulatory, inflammatory bowel disease, hyaluronan, adipogenesis

CATEGORIZED AS

- Medical
  - Disease: Autoimmune and Inflammation
  - Disease: Dermatology

RELATED CASES

2018-136-0

University of California, San Diego

Office of Innovation and Commercialization

9500 Gilman Drive, MC 0910, ,

La Jolla,CA 92093-0910

Tel: 858.534.5815

innovation@ucsd.edu

https://innovation.ucsd.edu

Fax: 858.534.7345