Endogenous Small Molecule Immune Response Modulator

Tech ID: 20019 / UC Case 2009-148-0

BRIEF DESCRIPTION

UCSF investigators have identified a novel endogenous agent that activates the Aryl Hydrocarbon Receptor.

VALUE PROPOSITION

Disorders of the immune system result in autoimmune diseases, inflammatory diseases, and cancer. As such, methods to modulate immune responses are important therapeutic strategies. In recent years, the Aryl Hydrocarbon Receptor (AhR) has gained interest as a potential therapeutic target for the treatment of immune-mediated diseases. In fact, activation of AhR has been shown to suppress development of autoimmune diseases such as type 1 diabetes. Unfortunately, most of the known AhR ligands are aromatic hydrocarbon environmental toxins, which trigger unwanted side-effects such as tumor promotion and immune suppression. It is therefore, highly desirable to identify and develop new AhR ligands that provide the beneficial effects of AhR agonism while avoiding unwanted side-effects.

TECHNOLOGY DESCRIPTION

Researchers at the University of California, San Francisco (UCSF) have identified a naturally occurring, immunologically relevant agonist of the Aryl Hydrocarbon Receptor (AhR). Excitingly, this novel agonist has been shown to block the development of Experimental Autoimmune Encephalomyelitis (EAE), an animal model of Multiple Sclerosis. It was further observed, that the inhibition of EAE development was characterized by a dramatic reduction in the number of T cells present in the CNS, but not in the periphery, indicating that autoimmunity is suppressed by the newly identified AhR ligand without the threat of global immunosuppression.

ADVANTAGES

- Endogenous ligand is naturally compatible with physiology and may lack side-effects of exogenous molecules.
- Novel AhR agonist suppresses autoimmunity without affecting global immunosuppression.
- Naturally occurring agent (i.e. non-environmental toxin).

APPLICATIONS

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OTHER INFORMATION

KEYWORDS

Aryl Hydrocarbon Receptor (AhR), immune system modulator, autoimmune disorder, multiple sclerosis, infectious diseases, cancer

CATEGORIZED AS

- **Biotechnology**
  - Health
- **Medical**
  - Disease: Autoimmune and Inflammation
  - Disease: Cancer
  - Disease: Infectious Diseases
  - New Chemical Entities, Drug Leads
  - Therapeutics

RELATED CASES

Efficacy of the novel endogenous small molecule has been demonstrated in animal models of multiple sclerosis, however, this technology, as an immune system modulator, is certainly applicable to other autoimmune diseases, carcinogenesis, and infectious diseases. Additionally, since this agent is present under physiological conditions, and not an environment toxin, it can potentially be used as a marker to determine the progression immunologically targeted diseases.

2009-148-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,071,101	09/11/2018	2009-148
United States Of America	Issued Patent	9,486,457	11/08/2016	2009-148

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