Novel Chemoattractant-Based Toxins to Improve Vaccine Immune Responses for Cancer and Infectious Diseases

Published date: Feb. 1, 2012

Technology description

Summary

Cancer is one of the leading causes of death in United States and it is estimated that there will be more than half a million deaths caused by cancer in 2008. A major drawback of the current chemotherapy-based therapeutics is the cytotoxic side-effects associated with them. Thus there is a dire need to develop new therapeutic strategies with fewer side-effects. Immuno-therapy has taken a lead among the new therapeutic approaches. Enhancing the innate immune response of an individual has been a key approach for the treatment against different diseases such as cancer and infectious diseases.
This technology involves the generation of novel chemoattractant toxins that deplete the T regulatory cells (Treg) or other immunosuppressive or hyperactivated cells locally. Treg controls activation of immune responses by suppressing the induction of adaptive immune responses, particularly T cell responses. Immunosuppressive cells such as tumor infiltrating macrophages or NKT and other cells down regulate antitumor immune responses. The chemoattractant toxins consist of a toxin moiety fused with a chemokine receptor ligand, chemokines and other chemoattractants that enables specific targeting and delivery to the Treg cells. This technology is advantageous over the more harmful antibodies and chemicals that are currently used for the systemic depletion of Treg cells. The current technology can be used therapeutically in a variety of ways. They can be used together with vaccines to increase efficacy of the vaccine for the treatment of cancer, and can used to locally deplete Treg cells or other immuno suppressive cells to induce cytolytic cell responses at the tumor site or to eliminate chronic infectious diseases such as HIV and tuberculosis.
Market:
565,650 deaths from cancer related diseases estimated in 2008.
The technology platform involving novel chemo-attractant based toxins can be used to improve vaccine immune responses. The cancer vaccine market is expected to increase from $135 million in 2007 to more than $8 billion in 2012.
The technology platform has additional market in treating several other clinical problems such as autoimmune diseases.

Application area

New chemoattractant based toxins targeted towards Treg cells.
New chemoattractant based toxins targeted towards immunosuppressive NKT and macrophages.
New chemoattractant based toxins targeted towards local depletion of hyperactivated CD4 T cells to treat autoimmune diseases.
Chemoattractant based toxins depleting Treg cells or other immunosuppressive cells causing enhanced vaccine immune responses.
Novel immunotherapy by increasing vaccine efficacy against cancer and infectious diseases.

Institution

NIH - National Institutes of Health

联系我们

叶先生

电 话：021-65679356
手 机：13414935137
邮 箱：yeyingsheng@zf-ym.com