Small Peptide Inhibitors for Treating Chronic Inflammation

“The body’s defenses that respond to infection and injury can sometimes result in inflammatory disorders. This Vitamin D-Binding Protein may help to treat chronic inflammation without interfering with other essential physiological functions.”
— Richard Kew, Ph. D, Assistant Professor, Department of Pathology, Stony Brook University

Background:
The human defense mechanism initiates distinct inflammatory and immune system responses to counteract infection, injury or tissue death. Interestingly, the altered expression, as well as the abnormal function of proinflammatory agents such as C5a, may lead to the onset of harmful, chronic inflammatory disorders. For decades researchers in academia and industry have sought to design therapeutic agents that block and/or inhibit these inflammatory chemotactic molecules as a way to treat chronic inflammation. Recent research has demonstrated that specific attributes of the Vitamin D-Binding Protein (DBP) may play a role in blocking undesirable C5a mediated inflammation.

Technology Description:
Dr. Richard Kew, assistant professor in the Department of Pathology at Stony Brook University, has developed a small peptide that behaves as a therapeutic agent and inhibitor of the C5a mediated chemotaxis (cellular response). Preliminary animal studies show that Dr. Kew’s 20 amino acid peptide, derived from the human DBP, can block the C5a induced neutrophil and leukocyte recruitment in tissue culture. Also, human leukocyte studies show that this novel peptide effectively inhibits unwanted inflammation without interfering with the other essential physiological functions of DBP, such as G-actin scavenging or sterol binding.

Advantages
This novel small peptide:
- Inhibits endogenous chemotactic factors, associated with the onset of chronic inflammatory diseases.
- Inhibits undesirable leukocyte recruitment without blocking other vital physiological functions.
- Eliminates many of the toxicity or immunological responses commonly associated with therapeutics because they are human derivatives.

Applications
- Treatment of chronic inflammation disorders without unwanted side effects.
- Chemotaxis

Inhibitory effects of Vitamin D Binding Protein (DBP) peptides on C5a-mediated chemotaxis and inflammation.

Patents / Publications:
- Issued Patent — # 11/243,960, Antagonist Peptides To The C5A Chemotactic Function of Vitamin D Binding Protein
- Identification of a Region in the Vitamin D-binding Protein that Mediates Its C5a Chemotactic Cofactor Function

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