Triptolide Analogs as Anti-Inflammatory Agents

Published date: Feb. 24, 2009

Technology description

Market Summary

Inflammation is known to be a component in a wide range of disease states including arthritis, asthma, and many types of cancer. For arthritis and joint disease, almost 20 percent of the US population, approximately 43 million people, is affected. This number is predicted to rise above 60 million people in the US alone by 2020. Current treatment for arthritis and related joint disease include non-steroidal anti-inflammatory drugs (NSAIDs), corticosteroids, disease-modifying anti-rheumatic drugs (DMARDs), and biologics. However, most of these drugs are aimed at managing the symptoms of the disease rather than altering the course. Each class also has side effects associated with its use at therapeutic levels.

Technical Summary

Triptolide is a natural product which has potent anti-cancer and anti-inflammatory activities. Although triptolide has been widely studied for its use in cancer therapy, its high toxicity limits its use in other disease states such as inflammation and auto-immune disorders. Although the mechanism of action of triptolide is unknown, it has been shown to inhibit the activation of NF-kappaB, effectively suppressing gene transcription of a variety of pro-inflammatory cytokines and chemokines such as IL-1Î² and TNF-alpha. A number of triptolide analogs have been synthesized with the portion of triptolide thought to contribute to its toxicity removed, the inventors were able to maintain the inhibition of TNF-alpha while decreasing the associated toxicity.

Application area

Small molecule therapeutics for the treatment of inflammation and autoimmune disorders.

Advantages

Decreased toxicity compared to the natural product triptolide.
Improved aqueous solubility compared to triptolide.

Institution

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