

SCIENTIFIC ABSTRACT

Background

BHT-3009 is an antigen-specific immunotherapy agent in development as a treatment of the autoimmune disease relapsing remitting multiple sclerosis (MS). The product is designed to suppress inflammatory autoimmune responses to myelin basic protein (MBP), one of the key self-antigens targeted in MS.

BHT-3009 is a plasmid expression vector that encodes full-length human myelin basic protein (hMBP) under the control of the cytomegalovirus immediate-early promoter/enhancer. When BHT-3009 is administered by intramuscular injection, low-level expression of hMBP protein occurs for a period of two to four weeks at the injection site and also within cells that traffic to draining lymph nodes. This limited expression of a self-antigen in a novel immunological context has been found to attenuate ongoing autoimmune responses in mouse and rat models of experimental autoimmune encephalomyelitis (EAE), the preclinical model for MS.

In studies in the SJL/J mouse model of EAE, plasmid DNA expression vectors encoding myelin autoantigens significantly reduced the severity of induced disability and the frequency of relapses. Treatment reduced the numbers of antigen-specific γ -interferon secreting T cells present in lymph nodes and suppressed auto-antibody responses to spreading epitopes.

Study Design

This is a multicenter, randomized, double-blind, placebo-controlled study to evaluate the safety, tolerability, and efficacy of BHT-3009 when administered intramuscularly to subjects with relapsing remitting multiple sclerosis.

Subjects will be screened for study eligibility within 2 weeks prior to randomization. Subjects who fulfill the eligibility criteria will be randomized 1:1:1 (Arm A: Arm B: Arm C) to receive intramuscular injections of either 0.5 mg of BHT-3009 (Arm A), 1.5 mg of BHT-3009 (Arm B) or placebo (Arm C).

Treatment will occur in two phases: induction and maintenance. During the induction phase, doses will be administered in Weeks 0, 2, and 4 (3 doses). During the maintenance phase, doses will be administered once every four weeks through Week 44 (10 doses). A total of 13 doses will be administered. Subjects will return four weeks after the last dose of study drug for a final visit (Week 48).

An independent Data Safety Monitoring Board will monitor safety data and provide advice to the study's sponsor.