Synthesis of Enigmol and its Analogues

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Technology description

Technical Summary

Sphingolipids are cell membrane components involved in cell processes ranging from cell growth and apoptosis to stress response, calcium homeostasis, and angiogenesis. Many naturally occurring sphingolipids exhibit therapeutic properties such as antibacterial, antifungal or antitumoral properties presenting novel avenues for drug development. A major drawback to their use as therapeutic compounds however is an inability to produce the sphingolipids in useful quantities efficiently, either by isolation from nature or synthesis in the laboratory.

This invention addresses these concerns, providing a new high-yield synthesis method for producing optically pure D-erythro-Sphingosine, the backbone component of sphingolipids. The new method employed begins with an N-protected Serine, which is then converted through a series of mild reactions to D-erythro-Sphingosine. By adding racemic inhibitors and catalytic compounds during key steps, this method of synthesis produces a 99% optically pure product with a-high yield. The D-erythro-Sphingosine can then be converted to a host of sphingolipids including phosphate sphingosines, ceramides, and glycolipids, each with their own possible therapeutic uses.

Application area

Optically pure D-erythro-Sphingosine that can be produced with high yield.

Advantages

Novel method efficiently produces D-erythro-Sphingosine and derivatives in bulk and with high optical purity.

D-erythro-Sphingosine can be converted to many other sphingolipids for use in the production of therapeutics and cosmetics.

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