

SPL7013

Brand Name: VivaGel
Drug Class: Microbicides

Drug Description

SPL7013 is a lysine-based dendrimer with naphthalene disulfonic acid surface groups. [1] It is the active ingredient of VivaGel, a water-based vaginal microbicide gel. [2]

HIV/AIDS-Related Uses

SPL7013 is a potent inhibitor of HIV-1 in vitro and appears active against numerous strains.[3] It is being studied for use as the active ingredient in VivaGel, a vaginal microbicide, in the prevention of vaginal transmission of HIV and genital herpes.[4] VivaGel is at the expanded safety/Phase IIa stage of clinical development and was granted fast-track status by the FDA in January 2006.[5]

A study to test VivaGel's safety, acceptability, and ease of use in healthy, sexually active young women in the United States and Puerto Rico began enrollment in July 2007.[6] [7]

A Phase I/II clinical trial is currently underway to investigate the timescale over which VivaGel retains activity against HIV and HSV-2, and the trial will measure the level of antiviral activity retained by VivaGel after vaginal administration.[8]

Non-HIV/AIDS-Related Uses

SPL7013 has demonstrated activity against herpes simplex virus-2 (HSV-2).[9]

A Phase I study in healthy, sexually active American and Kenyan women to test VivaGel's safety and tolerability began enrollment in October 2006.[10] This trial is the first microbicide clinical development program specifically for the prevention of HSV-2 (genital herpes).[11]

In an independent study conducted at Johns Hopkins University, SPL7013 also exhibited a potent contraceptive effect when tested in animals.[12]

In mid-July 2007, Starpharma signed an agreement with a leading condom company in relation to the use of VivaGel as a condom coating.[13]

Pharmacology

Dendrimers such as SPL7013 are polymers that contain a central core, interior branches, and terminal surface groups adapted to specific targets. SPL7013 has a polyanionic outer surface that provides for multiple target interactions. The active surface groups bind to gp120 proteins on HIV's surface, preventing CD4 receptor binding by healthy cells and thus blocking transmission of HIV to healthy cells.[14] [15]

A Phase I, double-blind, placebo-controlled trial evaluated the plasma absorption of SPL7013 in 36 healthy, sexually abstinent women. Women were assigned to 1 of 3 arms of 0.5, 1.0, and 3.0% gel, respectively, and all doses were administered once daily for 7 days. Eight women received active gel and four received placebo in each arm. Plasma samples after the first, third, fifth, and seventh doses showed no plasma SPL7013 levels, which confirmed localized activity of the drug.[16]

Adverse Events/Toxicity

A Phase I placebo-controlled trial in healthy women evaluated the safety and tolerability of VivaGel. No serious or significant adverse events occurred with the 0.5, 1.0, or 3.0% doses. Mild adverse effects attributed to SPL7013 were abdominal pain and painful urination. Vaginal flora levels decreased similarly across all treatment and placebo groups but rebounded to normal levels by 7 days post-treatment.[17]

Clinical Trials

For information on clinical trials that involve SPL7013, visit the ClinicalTrials.gov web site at <http://www.clinicaltrials.gov>. In the Search box, enter: SPL7013 AND HIV Infections.

Dosing Information

Mode of Delivery: Intravaginal.[18]

Dosage Form: Phase I studies have evaluated VivaGel at concentrations of 0.5, 1, and 3% applied vaginally once daily for 7 days. In addition, a 5.0%

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Dosing Information (cont.)

vaginal gel has been evaluated in macaques.[19]
[20]

VivaGel would be used via a single-use, prefilled vaginal applicator.[21]

Chemistry

CAS Name: L-Lysine, homopolymer
[polylysine][22]

CAS Number: 676271-69-5[23]

Molecular weight: 16,582 Da[24]

Physical Description: SPL7013: white to off-white solid.[25]

VivaGel: water-based gel.[26]

Solubility: Both SPL7013 and VivaGel are highly water soluble.[27]

Other Names

SPL 7013[28]

SPL7013 gel[29]

SPL-7013[30]

Further Reading

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Manufacturer Information

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For More Information

Contact your doctor or an AIDSinfo Health Information Specialist:

- Via Phone: 1-800-448-0440 Monday - Friday, 12:00 p.m. (Noon) - 5:00 p.m. ET
- Via Live Help: http://aidsinfo.nih.gov/live_help Monday - Friday, 12:00 p.m. (Noon) - 4:00 p.m. ET

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