

AIDS: Microbicide gel 'highly encouraging' in lab tests

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The dogged search for a vaginal gel to thwart the AIDS virus earned some good news on Wednesday as scientists announced that a cheap, commonly-used compound shielded monkeys from a lethal cousin of HIV.

They cautioned that a long road lies ahead before the microbicide can be verified as safe and effective for humans but hailed the outcome as a tremendous boost.

A cream that blocks or kills the human immunodeficiency virus (HIV) is a cornerstone of efforts in the fight against AIDS. It would be especially useful for women in sub-Saharan Africa, at risk from coercive sex from HIV-infected partners.

But the quest has suffered many blows. They include two trials that, dismayingly, found women who used a prototype gel ran a greater risk of HIV than those who used a dummy lookalike.

In a study published in *Nature*, researchers at the University of Minnesota tested a compound called glycerol monolaurate (GML).

GML exists naturally in the human body but is already licensed as an antimicrobial and anti-inflammatory agent in cosmetics and toiletries and as an emulsifier in foods.

Their hunch was that GML interferes with signalling processes in the

immune system, thus blocking HIV's rampage at a key stage.

When the virus enters the body, defence systems unleash a cascade of orders, dispatching so-called T immune cells to the site of the infection.

It is these cells that are then hijacked by HIV and turned into virus-making mini-factories, enabling the agent to proliferate throughout the bloodstream.

"Even though it sounds counter-intuitive, halting the body's natural defence system might actually prevent transmission and rapid spread of the infection," said chief investigator Ashley Haase.

The team gave a vaginal application of GML gel to five rhesus macaque monkeys and exposed them and a comparison group of five other animals to two large doses of simian immunodeficiency virus (SIV) -- the monkey equivalent of HIV.

Over the next two weeks, four of the control group contracted SIV. But none of the GML-treated group showed any acute infection, even though they were given up to two further shots of the virus.

GML, said the paper, breaks a "vicious cycle" of immune-system signalling and inflammatory response in the cervix and vagina.

"This result represents a highly encouraging new lead in the search for an effective microbicide to prevent HIV-1 transmission that meets the criteria of safety, affordability and efficacy," it declared.

Each dose of GML used in the experiment cost less than one US cent (0.75 of a euro cent).

GML's use as a microbicide and anti-inflammatory was discovered by

one of the researchers, Pat Schlievert, when he probed so-called toxic shock syndrome in the use of menstrual tampons.

He found that GML inhibited the toxin-making mechanism of the germ *Staphylococcus aureus*. Tampons coated with GML protected women from the bacterium and eased vaginal inflammation.

"GML is exceptionally inexpensive, is widely used in foods and cosmetics and is easy to formulate in many ways for vaginal use," said Schlievert.

He added that the compound had been repeatedly tested as safe and had no effect on beneficial vaginal bacteria.

Last month, scientists reported the first positive trial of a microbicide, a formula called PRO 2000, but said it reduced the risk of infection only by around 30 percent.

This is only half of the minimum benchmark for success. Availability of a microbicide that is 60 percent effective would avert two and a half million infections over three years, according to a 2003 mathematical study.

Around 33 million people around the world have HIV, two-thirds of them south of the Sahara. Globally, women make up 50 percent of all HIV-infected people, but in Africa, this rises to nearly 60 percent.

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