

Herpes drug inhibits HIV in patients infected with both viruses

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Researchers at the U.S. National Institutes of Health (NIH), McGill University and other institutions have discovered how a simple antiviral drug developed decades ago suppresses HIV in patients who are also infected with herpes. Their study was published in the Sept. 11 issue of the journal *Cell Host and Microbe*.

An NIH research team led by Dr. Leonid Margolis made the initial discovery, while Dr. Matthias Gotte, Associate Professor in Biochemical Virology at McGill's Department of Microbiology and Immunology, along with colleagues at Emory University, helped explain the precise molecular mechanisms.

According to Dr. Gotte, HIV/herpes co-infection rates are very high and carry significant health burdens for those patients who are already coping with HIV.

"In co-infected individuals, HIV disease progression is enhanced by the presence of herpes," he explained. "Why this is the case is not clear, but there's a lot of evidence for it. Moreover, if you're infected with HIV and herpes, it makes it easier for you to transmit HIV to other people. And if you're infected with herpes alone, it makes it easier for you to acquire HIV."

Though it was long-believed that acyclovir was an ineffective drug against HIV, it was often prescribed to co-infected patients in the hope of indirectly treating HIV by reducing the herpes load. Surprisingly, the

NIH team discovered that in the presence of herpes virus HHV-6, acyclovir actually attacks HIV directly and is able to suppress its reproduction.

Acyclovir is a "prodrug," which is converted into its active form only after it is administered to a patient. The research team demonstrated that the herpes virus contains an enzyme not present in HIV and it is this enzyme that converts acyclovir into a compound capable of attacking in HIV. Acyclovir by itself is simply inactive against HIV and therefore the drug can only work in people infected with both viruses.

The researchers are hopeful this discovery may open a new front in the war on HIV, particularly in parts of the developing world where rates of co-infection are extremely high.

"No anti-retroviral kills HIV completely," Dr. Gotte said. "We need to administer at least three drugs to hold it in check. This potentially gives us another weapon in the armory, and it's cheap and accessible, which matters a lot in the developing world."

Source: McGill University

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