Researchers uncover approach for possibly eradicating HIV infection

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Researchers from the newly-established VGTI Florida and the University of Montreal have uncovered a possible method for eradicating HIV infection in the human body. The researchers have also revealed new information which demonstrates how HIV persists in the body - even in patients receiving drug treatments - and how the virus continues to replicate itself in individuals undergoing treatment. The research findings will be published in the online version of the journal *Nature Medicine* on June 21 and will be featured in an upcoming print edition of the journal.

Medical advancements in the past 20 years have significantly increased the survival rates of AIDS patients. In fact, approximately 90 percent of patients infected with AIDS can survive with the disease as long as they are treated with a complex series of antiretroviral drugs.

"Current medications allow us to control HIV and limit its progression in most cases," explained Rafick-Pierre Sékaly, Ph.D., current scientific director for VGTI Florida, a former scientist at the University of Montreal, and senior author of the research paper. "However, the medications do not eradicate the disease. Instead, the disease persists within the body - much like water in a reservoir - and is never fully destroyed. We believe our latest research may help scientists and physicians overcome this hurdle."

The research team was able to identify a possible new way of attacking HIV by first identifying the specific cells where HIV infection persists in

patients currently undergoing treatment. They found that the disease is able to survive within two subsets of memory T-cells. Memory T-cells are a portion of the body's immune system and have the ability to learn, detect and attack certain types of infectious diseases.

By infecting cells within the body's own immune system, HIV is able to avoid antiviral treatments that are effective in stopping HIV in other cell types in the body. In-effect, HIV uses the body's own defense system as a hideout.

The research team was also successful in identifying how these HIV-infected memory T-cells replenish themselves. When populating T-cells, HIV does not replicate itself as it does in other cell types on the body. Instead, HIV persists in memory T-cells through cell division - a finding that holds significant implications for possibly stopping the disease.

"Based on this research, we believe one possible method for eliminating HIV in the body is to use a combined approach," said Dr. Sékaly. "We propose the use of medications that target viral replication of HIV throughout the body, in combination with drugs that prevent infected memory T-cells from dividing. We believe that by attacking the disease in these distinct two ways at once for an extended period of time, we can eliminate the reservoirs of HIV that currently persist within the human body, leaving an individual disease-free."

The next step for researchers is to begin testing their proposed treatment method using animal models and newly developed therapies.

"While this is a preliminary finding, we are hopeful that this research discovery will guide us in eradicating HIV infection in the body," said Dr. Sékaly.

Source: Oregon Health & Science University (news : web)