New Therapy Shows Potential as an Anti-HIV Medication

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A new antibody-based therapy prevents HIV from infecting CD4 cells and could become a potent antiviral treatment, according to an announcement by Peregrine Pharmaceuticals, which is developing the therapy. The new data are from a study published online ahead of print in *The Journal of Experimental Medicine*.

Peregrine's experimental agent works by blocking phosphatidylserine (PS), a molecule normally found on the inside of cell membranes but can become exposed on the outside of the membranes of viruses and virally infected cells. Exposed PS, researchers believe, enables viruses such as HIV to evade immune recognition and dampens the body's normal response to infection.

In previous experiments, researchers found that an anti-PS antibody called bavituximab had antiviral activity against a number of viruses as well as anti-cancer properties. That drug is in Phase I and II studies for HIV, hepatitis C virus (HCV) and several types of cancer.

In the most recent published experiment, Anthony Moody, MD, from Duke University in Durham, North Carolina, and his colleagues studied four antibodies targeted to PS. When the antibodies bound with PS on the surface of an immune cell called a monocyte, the researchers explained, the monocyte released chemical messengers called chemokines that blocked HIV from docking with CD4 cells.

"This publication is the latest in a series of presentations and publications that supports the potential of PS as a target in HIV infection and provides new insights into the unique mechanisms of action of our PS-targeting antibodies," said Steven W. King, president and CEO of Peregrine. "While past studies have focused on the broad nature of the PS target, these new data reveal that some of these antibodies may also have highly specific effects."

Moody and his colleagues found that the antibodies, in test tubes, blocked HIV infection of CD4 cells about 85 percent of the time. The specific area on the CD4 cell where the chemokines blocked entry was the CCR5 receptor—which is the target of the antiretroviral drugs Selzentry (maraviroc) and vicriviroc, and which is the receptor used by most strains of HIV to infect cells.

Moreover, Barton Haynes, MD, director of the Duke Human Vaccine Institute and senior author of the study, commented, "These results indicate that targeting a host cell lipid such as PS as an

anti-viral strategy is a promising concept of relevance to new therapeutic and possibly prophylactic innovations for HIV.”

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