Synthetic Compounds From Marijuana Appear to Fight HIV

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Synthetic anti-inflammatory compounds derived from the active ingredient of marijuana appear to show potential as anti-HIV agents, Wired.co.uk reports. Publishing their findings in the Journal of Leukocyte Biology, researchers from Temple University School of Medicine's Department of Pathology and Laboratory Medicine and Center for Substance Abuse Research (CSAR) studied synthetic derivations of THC, or tetrahydrocannabinol, a key chemical compound in marijuana, in cultures of HIV-infected cells.

Cannabinoids, which are the primary active compounds in marijuana, bind to proteins called CB2 receptors on the surface of macrophage immune cells. The CB2 site may play a role in reducing inflammation in the central nervous system, which is a major concern for people living with HIV, even those whose virus is fully suppressed thanks to antiretrovirals (ARVs). It is the CB1 receptors, mostly found in neurons in the brain, however, that cause marijuana's psychoactive effects. So synthetic THC that has been developed to bind only to CB2 receptors should not make people stoned.

It is believed that macrophage cells, which are found throughout the body, are a major component of the HIV reservoir and are probably the first cells infected after sexual transmission of the virus.

Using a non-clinical cell model, the investigators treated HIV-infected macrophages with one of three different synthetic compounds that bind to CB2. By periodically measuring the activity of the enzyme reverse transcriptase, which HIV needs to replicate itself, the investigators concluded after a seven-day period that all three compounds fought HIV replication.

The findings suggest that these "CB2 agonists" could be a potential addition to ARV therapy, and also that the human immune system could be prompted to fight the virus using similar mechanisms.

To read the Wired story, click here.

To read a Temple University release on the study, click here.

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