

Human Immunodeficiency Virus (HIV)

The human immunodeficiency virus is a retrovirus that invades cells in the human immune system, making it highly susceptible to infectious diseases. According to the World Health Organization, over 500,000 Americans have died from HIV/AIDS and over one million US citizens are living with the disease.

Survey data indicates that cannabis is used by as many one in three North American patients with HIV/AIDS to treat symptoms of the disease as well as the side-effects of various antiretroviral medications.[1-4] One recent study reported that more than 60 percent of HIV/AIDS patients self-identify as "medical cannabis users." [5] Patients living with HIV/AIDS most frequently report using cannabis to counter symptoms of anxiety, appetite loss and nausea, and at least one study has reported that patients who use cannabis therapeutically are 3.3 times more likely to adhere to their antiretroviral therapy regimens than non-cannabis users.[6]

Clinical trial data indicates that cannabis use does not adversely impact CD4 and CD8 T cell counts[7-8] and may even improve immune function.[9-10]

In 2007, investigators at Columbia University published clinical trial data in 2007 reporting that HIV/AIDS patients who inhaled cannabis four times daily experienced "substantial ... increases in food intake ... with little evidence of discomfort and no impairment of cognitive performance." They concluded, "Smoked marijuana ... has a clear medical benefit in HIV-positive [subjects]."[11]

That same year, investigators at San Francisco General Hospital and the University of California's Pain Clinical Research Center reported in the journal *Neurology* that inhaling cannabis significantly reduced HIV-associated neuropathy compared to placebo. Researchers reported that inhaling cannabis three times daily reduced patients' pain by 34 percent. They concluded, "Smoked cannabis was well tolerated and effectively relieved chronic neuropathic pain from HIV-associated neuropathy [in a manner] similar to oral drugs used for chronic neuropathic pain." [12]

In 2008, researchers at the University of California at San Diego reported similar findings. Writing in the journal *Neuropsychopharmacology*, they concluded: "Smoked cannabis ... significantly reduced neuropathic pain intensity in HIV-associated ... polyneuropathy compared to placebo, when added to stable concomitant analgesics. ... Mood disturbance,

NORML

Working to Reform Marijuana Laws

physical disability and quality of life all improved significantly during study treatment. ... Our findings suggest that cannabinoid therapy may be an effective option for pain relief in patients with medically intractable pain due to HIV."[13]

Most recently, cannabis inhalation has been demonstrated in clinical trial data to be associated with increased levels of appetite hormones in the blood of subjects with HIV infection.[14] In animal models, delta-9-THC administration is associated with decreased mortality and ameliorated disease progression."[15] In preclinical models, cannabinoids have also been shown to decrease HIV replication.[16]

Some experts now believe that "marijuana represents another treatment option in [the] health management" of patients with HIV/AIDS[17] and that cannabinoids "could potentially be used in tandem with existing antiretroviral drugs, opening the door to the generation of new drug therapies for HIV/AIDS."[18]

REFERENCES

- [1] Woolridge et al. 2005. Cannabis use in HIV for pain and other medical symptoms. *Journal of Pain Symptom Management* 29: 358-367.
- [2] Prentiss et al. 2004. Patterns of marijuana use among patients with HIV/AIDS followed in a public health care setting [PDF]. *Journal of Acquired Immune Deficiency Syndromes* 35: 38-45.
- [3] Braitstein et al. 2001. Mary-Jane and her patients: sociodemographic and clinical characteristics of HIV-positive individuals using medical marijuana and antiretroviral agents. *AIDS* 12: 532-533.
- [4] Ware et al. 2003. Cannabis use by persons living with HIV/AIDS: patterns and prevalence of use. *Journal of Cannabis Therapeutics* 3: 3-15.
- [5] Belle-Isle and Hathaway. 2007. Barriers to access to medical cannabis for Canadians living with HIV/AIDS. *AIDS Care* 19: 500-506.
- [6] de Jong et al. 2005. Marijuana use and its association with adherence to antiretroviral therapy among HIV-infected persons with moderate to severe nausea. *Journal of Acquired Immune Deficiency Syndromes* 38: 43-46.
- [7] Chao et al. 2008. Recreational drug use and T lymphocyte subpopulations in HIV-uninfected and HIV-infected men. *Drug and Alcohol Dependence* 94:165-171.
- [8] Rachiel Schrier. 2010. Effects of medicinal cannabis on CD4 immunity in AIDS. In: University of San Diego Health Sciences, Center for Medicinal Cannabis Research. *Report to the Legislature and Governor of the State of California presenting findings pursuant to SB847 which created the CMCR and provided state funding.* op. cit.

Working to Reform Marijuana Laws

- [9] Abrams et al. 2003. Short-term effects of cannabinoids in patients with HIV-1 infection: a randomized, placebo-controlled clinical trial. *Annals of Internal Medicine* 139: 258-266.
- [10] Fogarty et al. 2007. Marijuana as therapy for people living with HIV/AIDS: social and health aspects 19: 295-301.
- [11] Haney et al. 2007. Dronabinol and marijuana in HIV-positive marijuana smokers: caloric intake, mood and sleep. *Journal of Acquired Immune Deficiency Syndromes* 45: 545-554.
- [12] Abrams et al. 2007. Cannabis in painful HIV-associated sensory neuropathy: a randomized placebo-controlled trial.
- [13] Ellis et al. 2008. Smoked medicinal cannabis for neuropathic pain in HIV: a randomized, crossover clinical trial. op. cit.
- [14] Riggs et al. 2012. A pilot study of the effects of cannabis on appetite hormones in HIV-infected adult men. *Brain Research* 1431: 46-52.
- [15] Molina et al. 2011. Cannabinoid administration attenuates the progression of simian immunodeficiency virus. *AIDS Research and Human Retroviruses* 27: 585-592.
- [16] Ramirez et al. 2013. Attenuation of HIV-1 replication in macrophages by cannabinoid receptor 2 agonists. *Journal of Leukocyte Biology* 93: 801-810.
- [17] Fogarty et al. 2007. op. cit.
- [18] Temple scientists weaken HIV infection in immune cells using synthetic agents. May 1, 2013.