Very Low-Dose Weekly Islatravir Works as PrEP in Monkeys

Merck's investigational antiretroviral is a reverse transcriptase translocation inhibitor.

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Weekly doses of Merck's investigational antiretroviral reverse transcriptase translocation inhibitor islatravir (MK-8591) were highly effective as pre-exposure prophylaxis (PrEP) against a simian-human form of HIV (SHIV) among monkeys in a recent study.

Islatravir, the first drug in its class, is being studied for both HIV treatment and prevention. Studies presented last year showed that it suppresses HIV when used in combination antiretroviral treatment and could potentially be used in a PrEP implant requiring replacement only once a year.

As described in the Journal of Infectious Diseases, Martin Markowitz, MD, of the Aaron Diamond AIDS Research Center, and colleagues tested weekly doses of islatravir for use as PrEP in 16 male rhesus macaque monkeys.

Markowitz first presented findings from the study at the 2018 Conference on Retroviruses and Opportunistic Infections in Boston.

The monkeys were exposed rectally to SHIV, which is engineered for research purposes.

The research endeavor was broken up into three sequential studies that relied on the same group of monkeys, with any animals that did not become infected with SHIV in the first study transferred to the second study, with the same rule applying from the second to the third study.

In Study 1, eight monkeys received weekly oral doses of 3.9 milligrams per kilograms of body weight of islatravir on day zero and weekly for the subsequent 14 weeks, while eight other monkeys received a placebo.

All the animals were exposed to SHIV on day six of the study and then weekly for up to 12 exposures or until they tested positive for the virus.

Study 2, which included eight monkeys, reduced the dose of islatravir to 1.3 mg per kg. The animals received that dose weekly for six weeks. Then there was a four-week gap, after which these animals received another six weeks of islatravir at 0.43 mg per kg. The animals received

four weekly exposures to SHIV during each of these six-week periods.

Study 3 also included eight animals, which received islatravir and SHIV exposures according to the same pattern as in Study 2, only the drug was first dosed at 0.1 mg per kg and then at 0.025 mg per kg.

The majority of the control animals in Study 1 were infected with SHIV after just one exposure, with some infected after up to four challenges.

In Studies 1 and 2, all the animals that received islatravir remained free of SHIV, meaning that the drug's use as PrEP had lowered their risk of acquiring the virus an estimated 41.5-fold. In Study 3, two monkeys became infected while receiving 0.1 mg per kg of islatravir, which meant that the dose lowered the animal's risk of infection 7.2-fold. The 0.025 mg per kg dose of islatravir offered no protection against SHIV.

In an accompanying editorial, Jared Baeten, MD, PhD, of the University of Washington, wrote, "We are at an exciting time for HIV prevention—oral [Truvada] proved to the world that highly effective and safe PrEP was possible. Next-generation products will expand options in the not-too-distant future so that people can make the choices that will increase PrEP's prevention impact."

Editor's note: A previous version of this article misstated the dose of islatravir that offered no protection against SHIV. It was 0.025 mg per kg, not 0.1 mg per kg.

To read the study, click here.

To read an accompanying editorial on the study, click here.
