# Media Cooks Up Claim That Soy Sauce Treats, Even Cures HIV

May 14, 2014 By Benjamin Ryan

Soy sauce has become the latest supermarket item to contain the answer to HIV, according to a savory smorgasbord of reporting in the popular press. But don't go downing bottles of the brine just yet, because there's a small problem: The HIV-fighting molecule in question is not actually known to be in soy sauce at all, it is only "related to flavor enhancers found in soy sauce," according to the press release from the University of Missouri School of Medicine that spawned the media reports.

The tall tale began in 2001 when the Japanese soy sauce manufacturer Yamasa, while searching for a flavor enhancer for the popular condiment, synthesized a molecule known as EFdA, which belongs to a family of compounds called nucleoside analogues. Eventually, laboratory research found that EFdA is a nucleoside reverse transcriptase inhibitor (NRTI), which is a class of HIV-fighting drugs included under the nucleoside analogue umbrella. Not only that, but the molecule is highly effective at fighting HIV.

In a prime example of how the popular press tripped up on the finer details of this story, the LA Weekly, which lifted most of its article verbatim from the university press release, claimed, "A compound found in soy sauce may be more potent than the current top antiviral therapy in fighting HIV.... Seventy times stronger, in fact."

Not quite. The molecule's strengths are particularly notable when compared with those of the popular HIV drug Viread (tenofovir). For starters, EFdA is at least 10 times more potent at combatting "wild-type" (non-drug resistant) virus than Viread. And when HIV that has been exposed to Viread develops a particular resistance mutation called K65R, EFdA is 70 times more effective than Viread at fighting the Viread-resistant virus. (Thus, issuing a blanket statement about the molecule being perhaps 70 times stronger than other antiretrovirals is misleading; highly specific context is required.) In other words, the K65R mutation causes HIV to become hypersusceptible to EFdA, making the molecule even more effective as an antiretroviral to combat Viread-resistant virus than to fight wild-type.

Sarra S. Herzog, a spokesperson for Merck, which licensed EFdA from Yamasa two years ago, said she could not discuss the molecule's development at this time, except to say that it is not in Phase II trials.

As for the widespread claims in the press that soy sauce itself contains an HIV-fighting component, the phenomenon appears to have stemmed from the University of Missouri press release, which initially had a headline claiming, “Soy sauce molecule may unlock drug therapy for HIV patients.” (After POZ alerted the university to the error, the headline was corrected.) Stefan Sarafianos, PhD, an associate professor of molecular microbiology and immunology and biochemistry at the University of Missouri School of Medicine, said in an email to POZ/AIDSMeds that he bears “some responsibility for the misunderstanding in the press,” because in editing the press release he overlooked the faulty headline.

The initial draft of the press release also stated that EFdA is 70 times more potent than Viread, but left out the important fact that this is in the context of Viread-resistant virus. This perhaps explains the LA Weekly’s snafu on this point.

Sarafianos still stressed in his email that “EFdA is a very promising molecule.” And in the press release he stated the molecule “is less likely to cause resistance in HIV patients because it is more readily activated and is less quickly broken down by the body as similar existing drugs.”

As for the award for the most creative headline in the press? It goes to Tech Times, which touted: “Soy sauce may hold answer to HIV cure. You heard that right.”

To read the University of Missouri press release, click here.

To read the LA Weekly story, click here.

To read the Tech Times story, click here.

To read a longer article on EFdA from the University of Missouri, click here.

To read a 2013 paper in Retrovirology on EFdA’s hypersensitivity to Viread-resistant HIV, click here.

Editor’s note: a previous vesion of this article indicated that the K65R mutation causes EFdA to become hypersensitive to HIV, whereas the correct characterization is that this mutation causes the virus to become hypersusceptible to EFdA.

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