

Research on the antiviral effects of curcumin

When you feel an outbreak of oral herpes coming on, you're more likely to head to the medicine cabinet than the kitchen cabinet. Yet new research from the Van Andel Institute (VAI), an independent biomedical research organization in Grand Rapids, Michigan, suggests that the latter may be the source of a possible future treatment.

Researchers have studied curcumin, a component of the spice tumeric, for its antioxidant, antibacterial and anti-inflammatory effects, and believe it may have potential for treating conditions ranging from Alzheimer's to colitis to cancer. The VAI study examined curcumin's antiviral effects against HSV-1.

Results of the study, published in the April issue of *Virology*, demonstrate that cells treated with curcumin were less likely to support HSV-1 infection and replication. While curcumin didn't stop the herpes virus from entering and infecting the cells, it appeared to interfere with the process by which the virus utilizes the cell to replicate.

When a herpes virus (or other virus) enters a cell, there is a cascade of events that occur to allow the virus to take over the cell. At one stage, what are termed early-intermediate genes are required to reproduce or replicate the virus and then destroy the cell. In a process not fully understood, curcumin appears to interfere with the expression of these early-intermediate genes.

While curcumin did demonstrate an antiviral effect, the mechanism by which it did so was not what the researchers expected. Nevertheless, the study helped further the understanding of the potential of curcumin and will help inform future research. As Steven J. Triezenberg, Dean of the Graduate School at VAI commented, "Our recent publication tested a particular hypothesis about the mechanism whereby curcumin might inhibit herpes infections. As it turned out, the experiments suggest that our hypothesis was likely to be incorrect. So our work has moved into other questions about the genes of the virus are expressed in the host cell."

While much work remains to fully understand how curcumin may work, its development potential is evident. "I think that curcumin, once fully developed, might be a suitable topical treatment for initial infections or recurrences," says Dr. Triezenberg. "I expect that curcumin might reduce the length or severity of a cold sore or lesion. I do not expect that curcumin will be effective as a systemic drug, either to prevent initial infections nor to reduce the frequency of recurrences."

As for curcumin and HSV-2, the more common cause of genital herpes, Dr. Triezenberg notes, "We used HSV-1 in our experiments because we know the details of this virus and its

interactions with the cell much better. I expect that curcumin will be similarly effective against HSV-2. But we have no direct experimental evidence (yet) to support that expectation.”