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Liquorice may tackle SARS

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After trying all sorts of compounds researchers say root extract looks promising.

Liquorice may prove an unlikely ally in the fight against sudden acute respiratory syndrome (SARS). In the lab at least, an extract of the plant's root blocks the SARS virus from growing inside cells, new research reveals¹.

The study is part of an ongoing search for a treatment for SARS. The flu-like disease has claimed more than 750 lives since it emerged last year in Guangdong Province, China.

High doses of the liquorice extract, called glycyrrhizin, practically wipe out the SARS virus in infected monkey cells, find virologist Jindrich Cinatl of Frankfurt University Medical School, Germany and his colleagues. The drug is more potent than ribavirin, the most commonly used treatment for SARS.

Glycyrrhizin makes it difficult for the SARS virus to attach to and invade a target cell, the team found. It also hinders virus reproduction, slowing its spread from one cell to the next.

"We don't have many leads [for effective drugs] at this point, so this is very exciting," says virologist Robert Baker from the US Army Medical Research Institute of Infectious Diseases (USAMRIID) in Fort Detrick, Maryland. Good nursing and hospital care are the best treatments at present, he explains.

But glycyrrhizin has drawbacks: large amounts are needed to affect SARS-infected cells. "It's unlikely to result in a treatment for the disease," says biochemist Rolf Hilgenfeld who studies the virus at Lübeck University, Germany. "I can't imagine swallowing a tablet that big," he says.

Nonetheless, the compound may lead to the development of similar, more potent drugs, argues Baker.

Broad search

Glycyrrhizin is the molecule responsible for liquorice's peculiar flavour. It hampers the growth of other viruses, including herpes, and helps restore liver function in patients with hepatitis C. It is currently being assessed as a treatment for HIV infection, as it slows the replication of the virus in cultured cells.

The liquorice extract is one of many candidate compounds being tested against SARS. As the epidemic intensified, so too did efforts to find effective drugs.

“We will need some more experimental drugs to try Rolf Hilgenfeld , Lübeck University”

In the past two months, for example, Baker and other researchers at USAMRIID have tested over 200,000 compounds, sent in from laboratories across the world. "We're using a combination of brute force - screening just about every compound we can get our hands on - and a more rational approach - screening drugs that have already been licensed," says Baker. The team has yet to publish its results.

Even if glycyrrhizin or similar drugs are found to work in culture, they will still be a long way off the clinic. Researchers will need to pin down how the compounds operate, and test them in human cells and in animals. "We also need to work out how easily the drug gets into people, how long it stays around and how quickly it's eliminated," says Baker.

Even then results can be disappointing when drugs are tested on people. Ribavirin is losing popularity amongst Asian doctors who feel it does not benefit SARS-infected patients.

"The research needs intensifying," says Hilgenfeld. "We are likely to see a decline in the disease over the summer before probably coming back in the winter - so we will need some more experimental drugs to try."

References

1. Cinatl, J. et al. Glycyrrhizin, an active component of liquorice roots, and replication of SARS-associated coronavirus. *The Lancet*, **361**, 2045 - 2046, (2003).
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