

Researchers in China link dangerous foodborne pathogen to centipedes

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A dangerous foodborne parasite typically found in snails and other mollusks was detected in two patients in a Chinese hospital and traced to their consumption of raw wild centipedes, according to a new case report published today by the *American Journal of Tropical Medicine and Hygiene*.

Researchers from the Southern Medical University and Zhujiang Hospital in Guangzhou said it's the first time the *Angiostrongylus cantonensis* parasite—often called rat lungworm for its preference for the pulmonary arteries of rats—has been detected in centipedes. Centipedes are widely used in traditional Chinese medicine, though usually in a dried or powder form, which does not transmit the parasite.

"We don't typically hear of people eating raw centipedes, but apparently these two patients believed that raw centipedes would be good for their health," said Lingli Lu, a co-author of the report who works in the Department of Neurology in Zhujiang Hospital. "Instead it made them sick."

Mild infections with *A. cantonensis* may resolve on their own. But the parasite can penetrate the brain and spinal cord, which can lead to meningitis—an infection of the fluid around the brain—and, in rare instances, paralysis and death.

According to the U.S. Centers for Disease Control and Prevention, *A. cantonensis* is mainly found in China and Southeast Asia, and infections

usually have been linked to consumption of raw or undercooked snails. The parasite also has been detected in Africa, the Caribbean, Hawaii, [and, more recently, in Louisiana](#) and South Florida. In Louisiana, it has been found in the invasive apple snail, a freshwater snail native to South America that is sometimes consumed as food. In South Florida, the parasite has been found in the invasive [giant African land snail](#).

Why centipedes are sold in agricultural markets

While this is the first time the parasite has been found in centipedes, centipedes themselves are occasionally sold in the Chinese agricultural markets or routinely sold in traditional Chinese medicine pharmacies due to their perceived medicinal properties. Dried or crushed centipedes have been used for centuries in traditional Chinese medicine to [treat a variety of ailments](#), including whooping cough, tetanus and cardiovascular diseases. Also, today, extracts made from the [centipede](#) are being assessed for their [potential to fight cancer](#) and to serve as a [potent pain killer](#). But rarely are raw wild centipedes consumed to treat ailments. Lingli said the patients that are the focus of her study, a 78-year-old woman and her 46-year-old son, came from the rural countryside where a rumor was circulating that consuming raw centipedes also offered potential health benefits.

The path to diagnosis

According to the report, the woman arrived at the hospital complaining of a headache, drowsiness and cognitive impairment that had lasted for weeks. Subsequent examination and testing indicated symptoms of meningitis. And when tests ruled out viral or bacterial causes, the physicians probed her cerebrospinal fluid for other potential issues and discovered the increased number of eosinophils—a type of white blood cell—and antibodies to *A. cantonensis* in the cerebrospinal fluid and

blood.

The report notes that "further questions about the patient's history showed that she had eaten centipedes without cooking them on several occasions."

Meanwhile, a few weeks later, her son came to the hospital complaining of a "mild headache that had lasted for more than 20 days." He revealed to physicians that he, too, had consumed raw centipedes. Tests of his cerebrospinal fluid and blood detected elevated eosinophil levels and antibodies for the *A. cantonensis* parasite.

Both mother and son were cured after treatment with a 21-day course of the anti-parasitic drug albendazole and a two-week course of the steroid dexamethasone to address inflammation that arises as the [parasites](#) die.

The role of centipedes in rat lungworm transmission

To learn more about the potential of centipedes to serve as hosts for *A. cantonensis*, the researchers purchased 20 centipedes from the agricultural market where the patients had acquired their centipedes. The immature, or larvae, form of *A. cantonensis* was detected in seven of them.

The researchers then tested the capacity of centipedes to serve as intermediate hosts for *A. cantonensis* by infecting 20 centipedes with the parasite. However, the centipedes subsequently died. Lingli said the results could indicate that, while centipedes can be temporary hosts, we can't be sure they are able to serve as intermediate hosts, a classification that indicates an ability to carry and spread the parasite over a long period of time. Regardless, the researchers concluded that centipedes may still "act as a competent host" for transmitting the parasite to humans.

"This study shows why it's important to have physician scientists who can both treat patients and identify and investigate unusual cases that may have broader implications for public health," said ASTMH President Regina Rabinovich, MD. "The researchers not only found the source of infection in the laboratory, they did the work to show the wild centipedes that were in supply at the farmers' market could have been a viable source of transmission."

More information: *American Journal of Tropical Medicine and Hygiene* (2018). www.ajtmh.org/content/journals/0.4269/ajtmh.18-0151

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