

University of Minnesota startup to treat challenging bacterial infection

May 16 2012

A live biological preparation developed by University of Minnesota researchers could put a stop to an increasingly prevalent, and sometimes deadly, infection caused by the bacterium *Clostridium difficile*. CIPAC Limited, based in Australia with subsidiaries in California, will continue to work with the university to advance the technology to treat patients by using frozen and, eventually, encapsulated preparations.

C. difficile affects several million people and is linked to 14,000 deaths per year in the United States, according to the [Centers for Disease Control and Prevention](#). Symptoms of *C. difficile* infection include fever, nausea, and diarrhea, and most often occur following a prescribed course of [antibiotics](#). The antibiotics kill normal [microbes](#) that live in the colon, thereby making the patient more susceptible to infections such as *C. difficile*.

Paradoxically, while the cause of *C. difficile* infection is exposure to antibiotics, the infection itself is also treated using antibiotics, which can make things worse. *C. difficile* infections typically affect [older adults](#) in hospitals or in long-term care facilities, but is increasingly spreading into the wider community. In recent years it has become more frequent, more severe and more difficult to treat. Patients suffering from the infection require costly care -- researchers suggest it costs \$2,500-7,000 to treat each patient suffering from *C. difficile*.⁽¹⁾

"*C. difficile* can be suppressed with antibiotics, which have the unfortunate side effect of killing off the normal colon bacteria that offer

protection against infection," says Alexander Khoruts, M.D., co-inventor and associate professor of medicine within the university's division of Gastroenterology, [Hepatology](#) and Nutrition.

"Antibiotics don't work very well because they only suppress the *C. difficile*. Once you remove the antibiotic, it produces more of the infection," says Michael Sadowsky, co-inventor and McKnight University professor in the Biotechnology Institute and department of Soil, Water, and Climate.

The invention, a bacterial preparation, can enable restoration of normal bacteria in the colon.

"We are very excited to be working with the University of Minnesota in commercializing a treatment that has approximately 95% efficacy," says Geoff Rosenhain, founder of CIPAC. "Our goal is to bring to market a safe, natural and effective alternative to current treatment options, and to restore the wellbeing of patients suffering from debilitating *C. difficile* infections."

CIPAC is working with the FDA to begin clinical trials for the preparation. The technology was licensed exclusively to CIPAC by the university's Office for Technology Commercialization.

More information: (1) Dubberke, Erik R.; Reske, Kimberly Ann; Olsen, Margaret A.; McDonald, Clifford; and Fraser, Victoria J., "Short- and long-term attributable costs of *Clostridium difficile*-associated disease in nonsurgical inpatients." *Clinical Infectious Diseases*: An Official Publication of the Infectious Diseases Society of America, 46, 4, 497-504. 2008. Paper 8.

Provided by University of Minnesota

Citation: University of Minnesota startup to treat challenging bacterial infection (2012, May 16)
retrieved 4 May 2024 from

<https://medicalxpress.com/news/2012-05-university-minnesota-startup-bacterial-infection.html>

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