Richard Westlund
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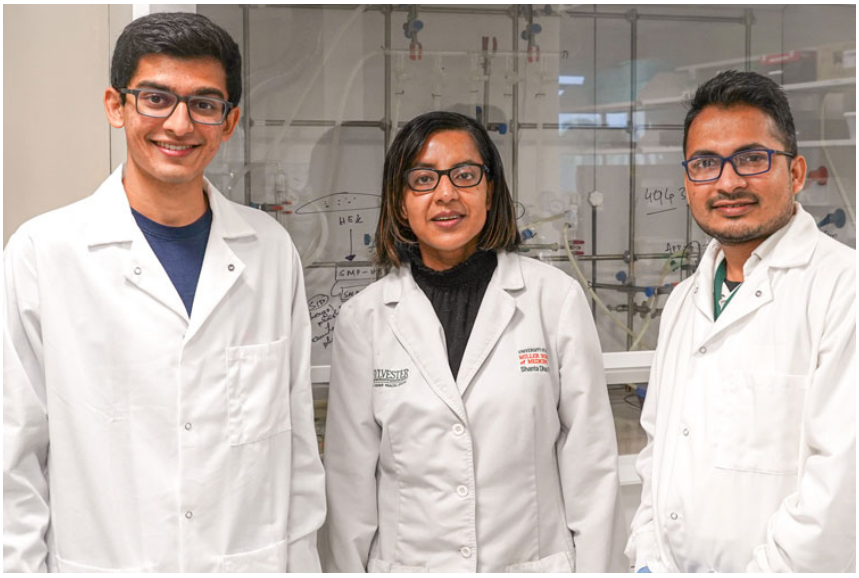
Sylvester Researcher Finds FDA-Approved Antiviral Drug Can Be Delivered Via Nanoparticle for COVID-19

A Sylvester Comprehensive Cancer Center researcher at the University of Miami Miller School of Medicine has found that an orally administered nanoparticle can deliver the FDA-approved drug Ivermectin to suppress the COVID-19 virus.



From left, Anuj S. Shah, Shanta Dhar, Ph.D., and Bapurao Surnar, Ph.D.

“Our laboratory research could provide the foundation for translational clinical research aimed at expanding therapeutic strategies for COVID-19 patients,” said Shanta Dhar, Ph.D., associate professor of biochemistry and molecular biology at the Miller School, and assistant director for technology and

innovation at Sylvester.

Dr. Dhar was the lead author on a new study, "Clinically Approved Anti-Viral Drug in an Orally Administrable Nanoparticle for COVID-19," published December 1 in the American Chemical Society journal, *ACS Pharmacology & Translational Science.* Miller School co-authors were an assistant scientist, Bapurao Surnar, Ph.D., a postdoctoral researcher, Mohammad Z. Kamran, Ph.D., and an undergraduate researcher, Anuj S. Shah.

Noting the urgent need for COVID-19 treatments, Dr. Dhar said Ivermectin has long been shown to be a potent inhibitor of Zika, yellow fever and other viruses, as well as an anti-parasite medication. Last year, Dr. Dhar and her team published a study in *ACS Nano* on Ivermectin as an "Orally Administrable Therapeutic Synthetic Nanoparticle for Zika Virus."

Nanoparticle developed at UM

Building on that work, Dr. Dhar and her team used a biodegradable polymer nanoparticle developed at the University of Miami to deliver high doses of Ivermectin to lung, alveolar, and kidney cellular cultures with the COVID-19 virus.

"We found that Ivermectin decreased the expression of the cellular receptors and the virus' spike protein, two keys to lowering disease transmission rates," Dr. Dhar said. "This platform technology also has the potential to serve as a therapeutic tool for other coronavirus strains with similar spike protein and receptor characteristics."

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Using nanoparticles also allowed the researchers to deliver high doses of Ivermectin to the COVID-19 virus without toxic side effects.

“The therapeutic can be gradually released into the bloodstream, where it can travel to the gut and lungs to maintain its effectiveness,” Dr. Dhar said. “Our next steps may include combining this delivery system with anti-inflammatory drugs or developing an inhaler to carry the therapeutic directly to the lung cells.”