

Depression medication could also protect against heart disease

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Patricia A. Lozano, a research assistant at the Texas A&M University Rangel College of Pharmacy Credit: Patricia A. Lozano

The antidepressant drug duloxetine could be beneficial to patients with both depression and cardiovascular disease, according to new studies

performed in human blood and in mice. Globally, more than 300 million people have depression, which comes with an increased risk of developing cardiovascular disease.

When a blood vessel is injured, the platelets in our blood respond by forming clots that stop blood bleeding. If this activation goes into overdrive, it can lead to thrombosis, a condition where [blood clots](#) form inside [blood vessels](#) and can dislodge to lead to a heart attack or stroke. In the new studies, researchers showed that duloxetine inhibited platelet function and protected against clot formation.

"Understanding the antiplatelet effects of duloxetine is critical due to the prevalence of patients with depression and [cardiovascular disease](#)," said Patricia A. Lozano, a research assistant at the Texas A&M University Rangel College of Pharmacy. "Having one drug that can treat both conditions could help avoid [drug interactions](#). Duloxetine may also serve as a blueprint for developing a novel class of antithrombotic agents."

Lozano, who works in the laboratory of Fatima Alshbool, PharmD, Ph.D., and Fadi Khasawneh, Ph.D., will present the new research at the American Society for Pharmacology and Experimental Therapeutics [annual meeting](#) during the virtual Experimental Biology (EB) 2021 meeting, to be held April 27-30.

"Our study shows, for the first time, that duloxetine, which has already been approved by the FDA for depression, has antithrombotic activity," said Lozano. "Repurposing an existing drug already approved by the FDA, helps avoid the lengthy and costly process of drug discovery and development."

The researchers studied duloxetine because it is a serotonin-norepinephrine reuptake inhibitor, which means it acts on the protein that controls levels of the neurotransmitter serotonin. In addition to

playing a role in depression, serotonin is known to help control platelet activity.

Using human blood, the researchers performed a series of experiments to examine duloxetine's effects on platelets in [human blood](#). They found that the antidepressant inhibited platelet aggregation in a dose-dependent manner, implying that the drug could prevent clot formation. Using a mouse model of thrombosis, the researchers also found that duloxetine slowed down the time it took for platelets to aggregate into a clot large enough to block an artery.

The researchers want to continue characterizing the antithrombotic effects of duloxetine. They also hope to collaborate with an expert in drug design to develop new drugs based on the structure of [duloxetine](#) and test their ability to protect from thrombosis.

More information: Patricia A. Lozano will present the findings in poster R4622 ([abstract](#)).

Provided by Experimental Biology

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