

Possible new blood test to diagnose heart attacks

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Sakthivel Sadayappan, Ph.D works at Loyola University Health System. Credit: Loyola University Health System

Loyola University Chicago Stritch School of Medicine researchers are reporting a possible new blood test to help diagnose heart attacks.

In the *Journal of Molecular and Cellular Cardiology*, researchers report that a large protein known as cardiac [myosin](#) binding protein-C (cMyBP-C) is released to the blood following a heart attack.

"This potentially could become the basis for a new test, used in conjunction with other blood tests, to help diagnose heart attacks," said senior author Sakthivel Sadayappan, PhD. "This is the beginning. A lot of additional studies will be necessary to establish cMyBP-C as a true [biomarker](#) for heart attacks."

Sadayappan is an assistant professor in the Department of Cell and [Molecular Physiology](#) at Loyola University Chicago Stritch School of Medicine. First author is Suresh Govindan, PhD, a postdoctoral researcher in Sadayappan's lab.

Between 60 and 70 percent of all patients who complain of chest pain do not have heart attacks. Many of these patients are admitted to the hospital, at considerable time and expense, until a heart attack is definitively ruled out.

An [electrocardiogram](#) can diagnose major heart attacks, but not minor ones. There also are blood tests for various proteins associated with heart attacks. But most of these proteins are not specific to the heart. Elevated levels could indicate a problem other than a heart attack, such as a [muscle injury](#).

Only one protein now used in blood tests, called cardiac troponin-I, is specific to the heart. But it takes at least four to six hours for this protein to show up in the blood following a heart attack. So the search is on for another heart attack protein that is specific to the heart.

The Loyola study is the first to find that cMyBP-C is associated with heart attacks. The protein is specific to the heart. And it may be readily detectable in a [blood test](#) because of its large molecular size and relatively high concentration in the blood.

Researchers evaluated blood samples from heart attack patients. They

also evaluated rats that had experienced heart attacks. They found that in both humans and rats, cMyBP-C was elevated significantly following heart attacks.

Sadayappan said cMyBP-C is a large assembly protein that stabilizes heart muscle structure and regulates cardiac function. During a [heart attack](#), a coronary artery is blocked, and heart muscle cells begin to die due to lack of blood flow and oxygen. As heart cells die, cMyBP-C breaks into fragments and is released into the blood.

"Future studies," Sadayappan and colleagues wrote, "would determine the time course of release, peak concentrations and half life in the circulatory system."

Provided by Loyola University Health System

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