

New blood test could detect heart attacks more quickly

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A new blood test can detect heart attacks hours faster than the current gold-standard blood test, according to a study led by Loyola University Chicago Stritch School of Medicine researchers.

The new test measures a protein that is released to the bloodstream by dying heart muscle. The protein is called cardiac myosin binding protein-C (cMyBP-C). The study found that cMyBP-C is released to the blood within just 15 minutes of cardiac damage, and rises to significant levels in three hours.

"This is a potential ultra-early biomarker that could confirm whether a patient has had a heart attack, leading to faster and more effective treatment," said Sakthivel Sadayappan, PhD, senior author of the study, published in the *American Journal of Physiology – Heart and Circulatory Physiology*.

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.

The only protein now used in blood tests that is specific to the heart is called cardiac troponin-I. It's the gold standard for detecting heart attacks. 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.

Like troponin-I, cMyBP-C is a protein specific to the heart. But it is more readily detected because of its large molecular size and relatively high concentration in the blood. 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](#).

Sadayappan and colleagues found that cMyBP-C levels in a group of 176 [heart attack patients](#) were more than 18 times higher than cMyBP-C levels in a control group of 153 patients who did not have heart attacks. In a separate analysis of 12 cardiac patients who underwent a procedure that mimicked a minor heart attack, researchers found that cMyBP-C levels peaked four hours after the procedure. Researchers found similar results in a porcine model of heart attack.

"These findings suggest that cMyBP-C has potential as an ultra-early biomarker for the diagnosis of [[heart attack](#)], but this still needs to be validated using a large cohort study," Sadayappan and colleagues wrote. A cMyBP-C [blood test](#) "might lead to an earlier diagnosis in patients who present at the emergency department shortly after coronary artery blockage. However, a systemic prospective investigation is required to establish such data for clinical use."

Provided by Loyola University Health System

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