



12-HETE as a Diagnostic Tool for Early Detection of Cardiovascular and Thrombotic Risk

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Diagnostics
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Inventor

Michael Holinstat

Further information

Megan Griffin
mrost@umich.edu

Innovation Partnerships Tech
Marketing Team
IPInventions@umich.edu

OVERVIEW

A new method to track the cardiovascular thrombotic state in a highly sensitive manner

- An assay that measures serum levels of 12-HETE, which predicts thrombotic risk
- Could serve as a replacement for D-dimer in evaluating for active clotting

BACKGROUND

Platelets play an essential role in the vessel, maintaining hemostasis and normal blood flow following vascular insult or injury under physiological conditions. While activation of the platelet is essential for adhesion and aggregation to occur at the site of vascular injury, excessive platelet reactivity can lead to the formation of occlusive thrombi, the predominant underlying cause of myocardial infarction and stroke. Cardiovascular disease remains the leading cause of death worldwide, and early detection of blood clotting remains an important part of the workup in these patients. D-dimer is a peptide released in the blood stream when plasmin splits fibrin that is present in a blood clot. So, D-dimer is commonly used as an initial screening test in emergency departments to diagnose patients who have symptoms consistent with myocardial infarction, pulmonary embolism, or deep venous thrombosis. D-dimer testing may fail to increase in patients for various reasons including impaired fibrinolytic activity, anticoagulant use, or symptoms which have persisted for more than two weeks before testing. As such, a need exists for additional or improved methods to detect active clotting states in patients with life-threatening diagnoses who could benefit from timely initiation of anticoagulant therapy.

INNOVATION

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A researcher at the University of Michigan has demonstrated that 12-HETE levels in the blood of patients with COVID-19 track the cardiovascular thrombotic state in a highly sensitive manner. The assay measures serum levels of 12-HETE, which is the product of 12-lipoxygenase oxidation of arachidonic acid in blood platelets. The investigator examined a longitudinal patient set with the infection and employed a prostaglandin and eicosanoid assay to reveal that 12-HETE may track even better than D-dimer for predicting thrombotic risk in these patients. While D-dimer testing is widely accepted as the first step in the work-up and management of patients with suspected, this novel test could serve as a replacement for D-dimer in diagnosing venous thromboembolism (VTE). This assay could therefore aid in the goal to exclude VTE and forego further expensive radiographic studies in outpatients with a low risk for harboring blood clots.