

Disease Diagnostics

FFA Sciences is using rational protein engineering to develop new diagnostics for human disease involving fatty acids. The first product resulting from this strategy is a simple blood-based test (ADIFAB) for cardiovascular ischemia, the largest cause of death in industrialized countries.

Diagnosing cardiovascular ischemia is considered to be one of the "Holy Grails" of cardiovascular medicine. Our patented assay is the only way to measure blood levels of unbound free fatty acids (FFAu), possibly the most sensitive indicator of ischemia.

The company's proprietary technology platform gives it a unique ability to monitor molecules critical for human health. In addition to ADIFAB, FFA Sciences is developing molecular probes to provide powerful new diagnostic fingerprints for a wide range of human diseases. Using its molecular probes, the company is investigating potential new targets, involving fatty acid metabolism, for the treatment of cardiovascular diseases, cancer, diabetes, and obesity.

Diagnosis of Cardiovascular Ischemia

Every year almost 8 million Americans visit hospital emergency departments (ED) complaining of chest discomfort. Of these approximately 40% do not have serious heart disease but are admitted due to the lack of a conclusive rule-out diagnostic at an estimated cost of \$10 billion. Even with the low threshold for admission, 2-8% of the presenting patients are discharged in error and of these patients, 30% suffer a heart attack or die one day later. These misdiagnoses are the largest source of medical malpractice lawsuits in the United States.

ADIFAB Solves the Problem

Our results show that plasma FFAu are an extremely sensitive indicator of the ischemia that precedes necrosis. Until the invention of ADIFAB (US Patent 5,470,714; European Patent 0457901) there was no way to measure unbound FFA. Not only has ADIFAB solved this problem, but it can provide accurate measurements of plasma FFAu using only a drop of blood and within seconds.

Clinical Evidence of Ischemia from ADIFAB Measurements

In published studies of patients undergoing balloon angioplasty, a model for ischemia, FFAu levels were found to rise in every patient, on average 14 fold above normal, within 30 minutes of the balloon inflation. These results show that FFAu measurements are a much more sensitive indicator of ischemia than ECG, because FFAu were elevated in every patient, whereas only half showed an ECG change.