




Diagnosing Deep Vein Thrombosis (DVT) using an Impedimetric Microanalysis System

DVT-IMP consortium, an EC funded Framework Six project

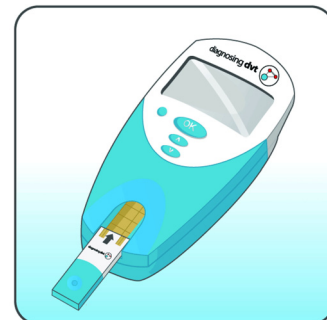
diagnosing dvt 

BACKGROUND and BASICS

A highly sensitive and portable device is being developed by the DVT-IMP consortium, a project funded by the European Commission under the Framework Programme Six to improve the speed, reliability and accuracy of early assessment of patients with symptoms of Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE) within primary care settings.

The platform is also designed to be generically applicable for screening and diagnostic applications within the environmental, security, veterinary and human health sectors.

The DVT-IMP consortium brings together world-class multidisciplinary teams from across Europe to build a clinically relevant prototype device, with initial tests aimed at the detection of D-Dimer concentration in whole blood.



CONCEPT and SOLUTION

- The key concept behind the sensor is the impedance measurement upon specific binding of Antigen to the Antibody fragment immobilised on the surface. The technology is augmented by efficient signal transduction and signal processing capabilities. Reference measurements are incorporated and non-specific interactions are minimised.
- The critical advantages of the device will include high sensitivity and specificity and the ability to detect a wide range of analytes - from small molecules to virus and bacteria, by immobilising the appropriate bio-recognition element.
- Four key areas are being integrated in building the prototype:
 - a) Bio-engineered D-dimer antibodies for high specificity immunoassay-based diagnostics
 - b) Micro engineered impedimetric electrodes incorporating biocompatible conducting polymer substrate
 - c) Disposable microfluidic manifold specifically enabling diagnostics at the point-of-first-contact
 - d) Advanced e-Health medical diagnostic software system.



STATUS and OUTLOOK

- The prototype of the assay is currently being tested. The individual components of the full device have been tested and optimized. In the integration stage, pilot tests will be in run in the laboratory on whole blood samples to establish the final values for performance parameters.
- The potential risks during integration of whole device have been addressed and appropriate tests have been designed to ensure the successful demonstration of the prototype during August 2009.
- The prototype tests with whole blood samples will confirm the competitive advantage of the hand-held point of care device in the clinical diagnostics market.
- Given the generically applicable nature of the platform technology being developed, a number of market areas can be addressed and the consortium is currently looking for partners to help in the market evaluation with a view to entry, final product development, including undertaking full clinical trials, if appropriate and market testing. Finally, the consortium welcomes discussions with partners keen on investing or exploring licensing opportunities.



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