Healthcare/Physics

MICROFLUIDIC THROMBOELASTOMETRY INSTRUMENT

Abstract

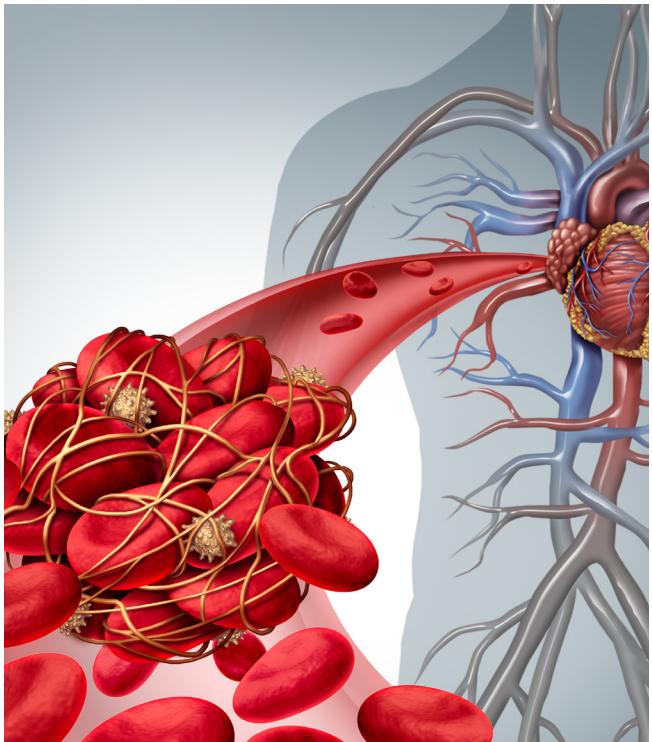
Coagulation devices (e.g. Thromboelastography (TEG) and tromboelastometry (TEM) based coagulation analyzers) that are available in the market are bulky and costly.

The invention relates to a cost-effective, bedside global clotting (coagulation) diagnostic device for rapid evaluation of hemostatic function which uses blood viscosity data over time. The coagulation device consists of a disposable cartridge unit comprising a core measurement unit and microfluidic channels, where the blood samples will be analyzed. Disposable microfluidic channels can be designed specifically for each test. The analyzer device quantitatively measures the coagulation starting time, clot formation time, maximum size to reach the time to clot, stiffness and elasticity of the clot, maximum clot firmness, stability and maximum lysis rate of clot through clotting curves. Targeted coagulation device based thromboelastogram (TEG) is different from existing systems because of its microfluidic design, low cost and measurement capacity using a drop of blood. These features expand the use of such devices for different types of patients.

Problem solved with the technology

The object of the invention is to provide coagulation analysis device for the determination of blood coagulation phases with improved performance, low cost and reduced error rates in the results.

The device that allows data to be available for detailed quantitative analysis of the microstructure deformation based on the motion of the blood is developed for evaluation of patient-specific hemostasis mechanism and treatment methods.



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Potential Application

The device can primarily show the coagulation and fibrinolysis steps through clotting curves similiar to TEM elastograms. The modified tests (heparinase, tissue factor, adding plateler blockers) can be used in healthy subjects and in different patient profiles.

The device can be used to taking blood samples from the patient to be injected and dissolution stages take place in cartrigde unit and the viscoelastic properties of the blood are recorded with the measurement unit.

Customer Benefits

Cost-effective, disposable cartridges enables specialization, enables measurement with only a drop of blood.

Market Trends

The global market for coagulation testing was worth US$1,730 million in 2016, and is expected to exhibit a solid 9% CAGR in the 2017-2025 forecast period to end up at a valuation of US$3,715.8 million.

Additional Technical Information

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