Thrombodynamics
Real-time visualization of clot growth

Spatial dynamics of Fibrin Clot Formation, Thrombin Generation & Fibrinolysis

- Global haemostasis Assay
- Easy to understand and interpret
- Highly sensitive to hypercoagulation states, identifying patients with high thrombotic risk.
- Allows monitoring of efficacy & safety of haemostasis treatments

Ordering Information

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<td>Thrombodynamics Analyzer System T2-T for Fibrin &amp; Thrombin Registration</td>
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<td>HE-TDX-10</td>
<td>Reagent kit for 10 fibrin measurements</td>
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Literature

3. Hypercoagulability - In search of a sensitive and reliable tool to assess hypercoagulability. Lorenzo Alberio et al., poster 1183 ISTH 2017
7. Liver Cirrhosis – Impact of thrombomodulin on spatial clot growth and fibrin polymerization in cirrhotic patients. Alessandro Casini et al, Poster 841 ISTH 2017

More info

Distributed by:

5-Diagnostics AG
Heuberg 7, CH-4051 Basel, Switzerland
+41 61 588 07 84
info@5-diagnostics.com
www.5-diagnostics.com

Manufactured by:

www.thrombodynamics.com
www.hemacore.com

[Thrombodynamics-4D]=[Thrombodynamics+Thrombin Generation]
Thrombodynamics-4D allows monitoring of spatial dynamics of thrombin generation using an AMC-based fluorogenic substrate simultaneously with registration of spatial fibrin clot growth from the TF-bearing surface:

- Reconstruction of blood vessel wall damage in vitro
- Physiological activation of coagulation
- Real-time observation of fibrin clot propagation and thrombin generation

Thrombodynamics provides information about the spatial separation of activation and propagation phases of the coagulation system. Coagulation is initiated by a special surface with immobilized Tissue Factor (TF) followed by a propagation phase that includes the reactions of the intrinsic pathway. Finally, the clot growth is restricted in space by the haemostasis’ inhibitory systems.

Fig. adapted from Panteleev et al. Biophys J 2010; 98(9):1751-1761

**Fibrin Clot Formation**

- Tlag, [min] – Lag-time – time between contact of activator with plasma sample and start of clot growth
- V, [µm/min] – Average rate of clot growth
- Tsp, [min] – Time of spontaneous clots formation

**Fibrin Clot Formation Parameters**

- Vi, [µm/min] - Initial rate of clot growth
- D, [au] - Clot density
- CS, [µm] - Clot size after 30 min

**Thrombin Generation**

Thrombodynamics Analysers T2-T records and analyses spatiotemporal dynamics of thrombin generations and fibrin formation simultaneously. Videos of the growing fibrin clot and AMC fluorescence during thrombin generation are registered in the same cuvette over time and space.

Main parameters of spatiotemporal Thrombin Generation:
- Ast, [AU/l] - Stationary amplitude of thrombin peak
- Vt, [µm/min] - Rate of thrombin peak propagation (Vt)

Additional parameters
- ETP_ATG, [AU*min/l] - Area under the curve
- Cmax_ATG, [AU/l] - Maximum thrombin concentration
- Lag_ATG, [min] - Lag time for thrombin generation
- Tmax_ATG, [min] - Time to peak

**Fibrinolysis**

In addition to regular Thrombodynamics clot growth parameters the new software allows quantification of fibrinolysis parameters in presence of specific fibrinolysis activators such as tPA and uPA.

Thrombodynamics allows the measurement of the fibrinolysis process by registration of the light scattering intensity inside the fibrin clot.

Fibrinolysis Parameters:
- LOT, [min] - Lysis onset time, defined as when the light scattering intensity inside the clot decreases 30% from the initial value.
- LP, [%/min] - The lysis progression is rate of the light scattering intensity decrease as the percentage of the initial value in the following 5 min [LOT, LOT+5 min].