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321.COAGULATION AND FIBRINOLYSIS: BASIC AND TRANSLATIONAL

Measuring Thrombin Generation in Platelet Rich Plasma with the ST Genesisia

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Background: Thrombin generation (TG) is nowadays used more and more for diagnosing and monitoring of patients. The ST Genesisia is a fully automated device for measuring TG in platelet poor plasma (PPP). As the samples are not being inverted prior to the measurement once loaded in the device, it was not known whether it was possible to measure TG in platelet rich plasma (PRP). Platelets can sediment in time possibly affecting TG results. The goal of this study was to evaluate the use of the ST Genesisia for measuring TG in PRP in time and to investigate whether the assay is sensitive to platelet antagonists.

Methods: Blood was taken from 6 healthy donors and PRP was immediately prepared by centrifuging the blood once for 15 minutes at 220g. The PRP was divided into 14 tubes: 11 tubes for measuring TG in time; i.e. after 0, 15, 30, 45, 60, 75, 90, 105, 120, 180, 240 minutes after the samples were loaded on board; 1 tube for platelet count measurement, 1 tube for TG with the Calibrated Automated Thrombogram (CAT) assay and 1 tube for freezing the PRP. The PRP reagent of the CAT assay was used for triggering TG that contains a low tissue factor concentration. Tukey's multiple comparisons test was used for statistical analysis.

Results: The platelet count remained stable in time even without inverting the vial prior to the measurement up to 3 hours. After 4 hours, platelet count was significantly lower ($p < 0.01$). TG in PRP remained stable in time up to 3 hours, after that lagtime and time-to-peak were extended by an average of 48% and 16%, respectively (p -values < 0.0001 and 0.0121 , respectively), while ETP and peak height remained stable (with low CV's of $< 6.0\%$ and $< 7.3\%$, respectively). The ST Genesisia proved to be sensitive to platelet antagonists aspirin ($100\mu\text{M}$) and Cangrelor (500nM) as peak height decreased with 22% and 24%, respectively. TG measured with the CAT and the ST Genesisia was comparable. Measuring TG in PRP after being frozen at -80°C resulted TG kinetics similar to TG in PPP, with a shorter lagtime (-67%) and time-to-peak (-64%), with an increased peak height ($+82\%$), and velocity index ($+383\%$), and an unaffected ETP.

Conclusion: The ST Genesisia can be used for the reproducible measurement of TG in PRP up to two hours after loading the samples in the device.

Disclosures Ninivaggi: Diagnostica Stago: Other: Synapse Research Institute is part of the Diagnostica Stago group.. **De Laat-Kremers:** Synapse Research Institute: Current Employment, Other: Synapse Research Institute is part of the Diagnostica Stago group.. **De Laat:** Diagnostica Stago: Other: Synapse Research Institute is part of the Diagnostica Stago group..

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