

**Ceveron TGA RC Low - English****INTENDED USE**

Ceveron TGA RC Low is used for determination of thrombin generation in human citrated plasma on Ceveron alpha TGA and instruments of the Ceveron 100 series with fluorogenic channels. Ceveron TGA RC Low trigger reagent is used for measurement of thrombophilic tendency, as well as for the determination of thrombogenicity of microparticles.

**SUMMARY**

Ceveron TGA RC Low is based on monitoring the fluorescence generated by the cleavage of a fluorogenic substrate by thrombin over time, upon activation of the coagulation cascade in plasma by Ceveron TGA RC Low trigger composed of tissue factor and negatively charged phospholipids.

The trigger composition is specially adapted to detect

- activation of the extrinsic pathway
- changes in the positive feedback loop of intrinsic pathway activation
- thrombogenicity of microparticles of the plasma sample

From the changes in fluorescence over time, the concentration of thrombin (nM) in the sample can be calculated using the respective thrombin calibration curve. The increase in thrombin concentration over time allows the calculation of the thrombin generation curve and to calculate thrombin generation parameters.

**REAGENTS**

The Ceveron TGA RC Low contains:

	Reagent / Content	Description
3 x 1 mL	Ceveron TGA RC Low	Trigger reagent with low concentration of phospholipid micelles, containing rHTF in Tris-Hepes-NaCl buffer, lyophilized
3 x 1.5 mL	Ceveron TGA BUF	Tris-Hepes-NaCl buffer, lyophilized
3 x 3 mL	Ceveron TGA SUB	Fluorogenic substrate 1 mM Z-G-G-R-AMC, lyophilized
3 x 1 mL	Ceveron TGA CON H	Human plasma with increased thrombin generation, lyophilized
3 x 1 mL	Ceveron TGA CON L	Human plasma with decreased thrombin generation, lyophilized
1 x 25 mL	Calcium Chloride solution 25 mM	CaCl <sub>2</sub> 25 mM, ready to use

**Material required (not supplied with the kit)**

- Distilled water
- Precision pipettes
- Variable pipette
- Laboratory timer
- REF 5006347 Ceveron TGA CAL

**Warning and precautions**

- IVD for in vitro diagnostics use.
- This kit is intended for use by personnel trained in laboratory procedures and universal precautions for the use of chemicals and potentially biohazardous substances.
- All human blood or plasma products as well as samples must be considered as potentially infectious. They have to be handled with appropriate care and in strict observance of safety regulations. The rules pertaining to disposal are the same as applied to disposing hospital waste.
- Control plasmas are made from human blood and any individual plasma involved in the procedure is tested HbsAg, HIV 1/2 Ab and HCV-Ab-negative by FDA approved or CE marked methods. However, all human blood products should be handled as potentially infectious material.
- Get a Material Safety Data Sheet for this product from www.technoclone.com.

**Stability and storage**

The expiry date printed on the labels is only applicable to storage of the unopened containers at 2...8 °C.

Stability opened/ in use:

Reagent	Ceveron alpha TGA / Ceveron 100 series (open vial)
Ceveron TGA RC Low	8 hours
Ceveron TGA BUF	8 hours
Ceveron TGA SUB	8 hours
Ceveron TGA CON H	4 hours
Ceveron TGA CON L	4 hours
CaCl <sub>2</sub> 25 mM	7 days

Avoid contamination by microorganisms.

**TEST PROCEDURE****Preparation of plasma samples**

For preparation of Platelet Poor Plasma samples a standardized procedure such as CLSI H21-A5 or DIN 58905 is required to be implemented to minimize variability caused by preanalytical steps.

It is recommended to use the locally established sample collection method to reduce additional preanalytical errors.

An immediate centrifugation after blood withdrawal is recommended.

Further we recommend an immediate shock freezing of the centrifuged samples.

Attention! The frozen samples should be stored in a constant environment - avoid exposing the samples to variations in temperature. Before transportation, we recommend to centrifuge and prepare the plasma samples.

Thaw frozen samples rapidly at 37 °C. Gently mix before testing. After thawing, the assay must be performed within 2 hours.

Plasmas should be frozen only once; during storage, the vials should be tightly capped.

Stability of the sample material:

Sample material	18...25 °C	-20 °C
Platelet poor plasma	4 hours	1 month

Avoid contamination by microorganisms.

**Preparation of reagents**

Before starting the test, all the required components must be brought to room temperature.

Avoid foam formation when reconstituting plasmas and mixing reagents or buffers.

Vials have to be mixed thoroughly to ensure that the whole material is resuspended. Mixing is performed best by careful upside-down movements of the vial. Vortex must be avoided, as it would cause air bubbles in the reagent and these would disturb fluorescence measurement.

Special care has to be taken on substrate reconstitution. The lyophilized material is clear and can adhere to the wall of the vial. Make sure that the whole material is dissolved!

Before using the reagents, the vials need to be mixed again thoroughly by careful upside-down movements. Vortex must be avoided.

- Ceveron TGA RC Low: Dissolve each bottle of lyophilized TGA RC Low trigger in 1.0 mL distilled water and swirl gently. Allow the reconstituted material to stand for 20 minutes at room temperature before use.
- Ceveron TGA BUF: Dissolve each bottle of lyophilized buffer in 1.5 mL distilled water and swirl gently. Allow the reconstituted material to stand for 20 minutes at room temperature before use.
- Ceveron TGA SUB: Dissolve each bottle of lyophilized substrate in 3.0 mL distilled water and swirl gently. Allow the reconstituted material to stand for 20 minutes at room temperature before use.
- Ceveron TGA CON H: Dissolve each bottle of lyophilized control high in 1.0 mL distilled water and swirl gently. Allow the reconstituted material to stand for 20 minutes at room temperature before use.
- Ceveron TGA CON L: Dissolve each bottle of lyophilized control low in 1.0 mL distilled water and swirl gently. Allow the reconstituted material to stand for 20 minutes at room temperature before use.
- Calcium Chloride solution: Ready to use.

**Performance of the test**

The Ceveron TGA RC Low is always used in combination with the Ceveron TGA CAL.

Ceveron TGA RC Low is performed on the Ceveron alpha TGA, the Ceveron t100 and the Ceveron s100 with the respective application.

Ceveron TGA RC Low is calibrated on the Ceveron alpha TGA, the Ceveron t100 and the Ceveron s100 using the Ceveron TGA CAL. Follow the instructions from kit the Ceveron TGA CAL insert to perform the calibration.

Ceveron TGA controls low and high are recommended for a complete quality control program. Ceveron TGA controls low and high are designed for this program. Each laboratory should establish its own mean and standard deviation for a quality control program in order to monitor laboratory testing. Controls should be analyzed before validating patient results in accordance with good laboratory practice.

**LIMITATION OF THE TEST**

Reliable results can only be obtained when blood collection is standardized and follows the criteria of minimal activation of the clotting system during venipuncture. Care has to be taken during centrifugation of blood and plasma that only such plasma samples are used for the assays that comply with the requirements for the respective assays. In case of use of incorrect plasma samples interpretation of the results might become impossible.

$\alpha_2$ -MG-thrombin complexes formed during thrombin generation reaction do not influence the most important TGA parameter Peak Thrombin, but can lead to increase of AUC values.

All types of anticoagulants influence thrombin generation parameters.

Microparticles of different origin trigger thrombin generation, influencing the TGA parameters. Care has to be taken to avoid microparticle release during sample preparation and storage.

**INTERPRETATION OF RESULTS**

Ceveron TGA RC Low results are reported as nM Peak Thrombin.

The results can also be displayed in Lag Phase, slope and area under the curve (AUC).

The Ceveron software calculates thrombin generation in the sample over time and the results are given in nM thrombin generated in the sample for each point of time during the whole coagulation process. The pattern seen resembles the figure provided. The following parameters can be used as readout:

- **Lag phase** from the time point when the TGA reagent including CaCl<sub>2</sub> is added until the first burst in thrombin formation
- **Peak thrombin**: Maximal concentration of thrombin formed
- **AUC**: Area under the curve

For interpretation of the results other information, including the clinical data should be used.

**REFERENCE RANGE**

Following normal ranges were determined testing 100 healthy normal donor PPP samples:

Normal range for Ceveron TGA RC Low Kit: 43 – 368 nM Peak Thrombin

Normal range for Ceveron TGA RC Low Kit 1236 – 2945 nM AUC

It is recommended that individual laboratories establish their own normal range. When interpreting the serological results the history of the patient has to be taken into account.

**STANDARDISATION**

The thrombin calibrator is calibrated against the Thrombin Reference Preparation of the WHO. Consult the batch table.

**LITERATURE**

Please contact Technoclone www.technoclone.com or your local distributor.

**EDITORIAL NOTE**

This document is available in several languages. The translations have been done using the master document in English. In the event of doubts or discrepancies, the wording in the master document in English shall take precedence.

**Ceveron TGA RC Low - Deutsch****ANWENDUNG**

Ceveron TGA RC Low dient zur Bestimmung der Thrombingenerierung in humanem Citratplasma am Ceveron alpha TGA, sowie den Systemen der Ceveron 100 Serie mit Fluoreszenzkanälen. Das Ceveron TGA RC Low wird zur Messung einer Thromboseneigung, sowie zur Bestimmung der Thrombogenität von Micropartikeln verwendet.

**ZUSAMMENFASSUNG**

Ceveron TGA RC Low basiert auf der Messung der Änderung der Fluoreszenz, die bei der Spaltung eines fluorogenen Substrats durch Thrombin entsteht. Die Gerinnungskaskade wird durch die Zugabe des Triggers Ceveron TGA RC Low der aus einer Mischung von Tissue Faktor und negativ geladenen Phospholipiden besteht, aktiviert.

Durch die spezielle Zusammensetzung des Triggers

- erfolgt die Aktivierung des exogenen Gerinnungssystems
- können Änderungen in der positiven Rückkopplung über das endogene System erfasst werden
- kann die Thrombogenität von Micropartikeln der Plasmaprobe erfasst werden

Aus der Änderung der Fluoreszenz im Zeitablauf kann die Thrombin Konzentration (nM) der Probe unter Verwendung der entsprechenden Thrombin Kalibrierungskurve berechnet werden. Die Zunahme der Thrombin Konzentration über die Zeit erlaubt es die Thrombingenerierungskurve und die Parameter der Thrombingenerierung zu berechnen.

**REAGENZIEN**

Das Ceveron TGA RC Low enthält:

	Reagenz / Inhalt	Beschreibung
3 x 1 mL	Ceveron TGA RC Low	Trigger Reagenz mit niedriger Konzentration von Phospholipid Myzelien und rHTF in Tris-Hepes-NaCl Puffer, lyophilisiert
3 x 1.5 mL	Ceveron TGA BUF	Tris-Hepes-NaCl Puffer, lyophilisiert
3 x 3 mL	Ceveron TGA SUB	Fluorogenes Substrat 1 mM Z-G-G-R-AMC, lyophilisiert
3 x 1 mL	Ceveron TGA CON H	Humanes Plasma mit erhöhter Thrombingenerierung, lyophilisiert
3 x 1 mL	Ceveron TGA CON L	Humanes Plasma mit verminderter Thrombingenerierung, lyophilisiert
1 x 25 mL	Calcium Chloride solution 25 mM	Calciumchlorid Lösung 25 mM, gebrauchsfertig

**Benötigtes Material (nicht im Kit enthalten)**

- Destilliertes Wasser
- Präzisionspipetten
- Variable Pipetten
- Labortimer
- REF 5006347 Ceveron TGA CAL

**Warning and precautions**

- Nur zur Anwendung als in vitro Diagnostikum.
- Das Testkit ist zur Verwendung durch Laborpersonal bestimmt welches im Umgang mit der Testmethode sowie mit allgemeinen Sicherheitsmaßnahmen im Umgang mit Chemikalien und potentiell biologischen Risiko geschult ist.
- Alle humanen Blut- bzw. Plasmaprodukte und Proben müssen als potentiell infektiös angesehen werden. Sie sind mit den notwendigen Sorgfalt und entsprechend den Sicherheitsvorschriften zu behandeln und wie Krankenhausmüll zu entsorgen.
- Obwohl alle Kontrollen, hergestellt aus humanem Blut, und alle hierzu verwendete Einzelplasmen für HbsAg, HIV 1/2 Ak und HCV-Ak negativ getestet sind, müssen sie als potentiell infektiös betrachtet werden.
- Ein Sicherheitsdatenblatt kann von www.technoclone.com heruntergeladen werden.

**Lagerung und Stabilität**

Das Reagenz ist ungeöffnet bei 2...8 °C zu lagern und bis zu dem auf dem Etikett angegebenen Datum verwendbar. Stabilität nach Rekonstitution:

Reagenz	Ceveron alpha TGA / Ceveron 100 Serie (offen)
Ceveron TGA RC Low	8 Stunden
Ceveron TGA BUF	8 Stunden
Ceveron TGA SUB	8 Stunden
Ceveron TGA CON H	4 Stunden
Ceveron TGA CON L	4 Stunden
CaCl <sub>2</sub> 25 mM	7 Tage

