CoaguChek aPTT Test

REF		SYSTEM
06882382 119	2 x 24	CoaguChek® Pro II

English

Intended use
The CoaguChek aPTT Test is an in-vitro assay for the evaluation of unfractionated heparin and the quantitative determination of activated partial thromboplastin time[1] (aPTT) in patients with suspected deficiencies of coagulation factors of the intrinsic and common coagulation pathways, with the exception of fibrinogen using the CoaguChek Pro II meter. The test can be used with either capillary, venous, or arterial fresh whole blood.

Note: Please note that the catalogue number appearing on the package insert retains only the first 8 digits of the licensed 11-digit Catalogue Number :06882382019 for the CoaguChek aPTT test. The last 3 digits -019 have been replaced by -119 for logistic purposes.

Summary
The CoaguChek aPTT Test is a one step coagulation test using celite as activator and a mixture of defined phospholipids as replacement for platelets required for measurement of the intrinsic pathway of coagulation. The CoaguChek aPTT Test shows linear correlation to the anticoagulation effect of heparin concentrations between 0.1 and 1.0 IU/mL blood. The CoaguChek aPTT Test is insensitive to low molecular weight heparins (LMWH) up to 0.5 IU/mL blood.
The CoaguChek aPTT Test can be used
- for monitoring of unfractionated heparin therapy.[2]
- for the determination of the activated partial thromboplastin time in patients with suspected deficiencies of coagulation factors of the intrinsic and common coagulation pathways, with the exception of fibrinogen.[3]

The CoaguChek aPTT Test whole blood value is automatically converted into plasma-equivalent seconds to improve the ease of interpretation.
CoaguChek specific therapeutic ratios 1.5 and 2.5 equivalent to anti-Xa ratios 0.3 and 0.7 were found in external performance evaluation [7].

Test principle
Electrochemical measurement of activated partial thromboplastin time following activation of blood coagulation with celite. Each test strip has a test area containing an aPTT reagent. When blood is applied, the reagent is dissolved, and an electrochemical reaction takes place which is transformed into a clotting time value. The clotting time value is displayed on the meter screen in plasma-equivalent seconds.

Reagent
The test strip contains celite as activator, a defined mixture of phospholipids and stabilizers.

Precautions and warnings
For in vitro diagnostic use.
Exercise the normal precautions required for handling all laboratory reagents.
Disposal of all waste material should be in accordance with local guidelines.
Safety data sheet available for professional user on request.

Handling
- Perform the test as described in the CoaguChek Pro II operator's manual and in this method sheet. All operating steps are described and illustrated in detail in the operator's manual.
- Each code chip belongs to a particular lot of test strips. With every new lot use the according new code chip supplied.
- Insert the test strip into the test strip guide.
- Apply the blood drop to the test strip within 15 seconds when using capillary blood and 30 seconds after venous or arterial blood collection. Applying blood later than this may give an inaccurate result, as the coagulation process would have already started. Never add more blood to the test strip after the test has begun.
- You can either apply the drop of blood to the sample application area of the strip from above, or hold it against the side of the sample application area. The test strip draws the blood by capillary action. You hear a beep tone when you have applied enough blood (provided the beep tone is turned on).
- Perform the test exactly as described in the operator's manual. Do not touch or remove the test strip when a test is in progress.
- Wait until the result is displayed which can last several minutes depending on the heparin concentration in the sample.

For optimum performance of the system, refer to the operator's manual for test-specific instructions. If you receive error messages, please refer to the operator's manual.

Storage and stability
Store at 2-30 °C. The test strips can be used up until the expiry date printed on the box and test strip container.
Do not use the test strip after the specified expiration date.
Tightly re-cap the container immediately after removing a test strip.
This is required in order to prevent the remaining test strips from deteriorating through exposure to external influences like humidity.

Specimen collection and preparation
Sample volume: min 8 µL
Low sample volume will cause an error message.
For specimen collection and preparation only use suitable tubes or collection containers.
Do not use tubes containing anticoagulants or coagulants. When using a syringe for blood collection, discard the first 4 drops before applying the blood sample on the test strip.
If you use capillaries, do not use glass capillary tubes or capillary tubes that contain anticoagulants. Blood can be collected by venipuncture or drawn from a venous or arterial access. In case the blood is drawn from indwelling blood lines, flush access port thoroughly before collecting the blood sample. If arterial blood is used flushing of the access device according to the CLSI[a)] guideline is mandatory. Please note that even then adhesion of heparin to access devices can lead to differences between arterial and venous blood. Do not use glass blood collection tubes. Specimen collection should be performed according to the CLSI guideline (H21-A3) for obtaining blood samples for coagulation testing.

a) Clinical and Laboratory Standards Institute

Sample material
Equivalency was shown between venous, arterial and capillary blood.

Materials provided
- Test strips and 1 code chip

Materials required (but not provided)
- REF 07210841190, CoaguChek Pro II meter (with W-LAN) or
- REF 07237944190, CoaguChek Pro II meter (without W-LAN)
- REF 06882692190, CoaguChek aPTT Controls
- REF 03603539, Lancets (Accu-Chek® Safe-T-Pro Plus)

Calibration
To obtain plasma-equivalent seconds the CoaguChek aPTT Test masterlot is calibrated to the whole blood system Hemochron Signature Elite which according to the manufacturer's information displays plasma-equivalent seconds calibrated to the laboratory aPTT method Actin FSL (Siemens). Hence CoaguChek plasma-equivalent aPTT values correlate with Actin FSL.
Calibration of production lots is performed with the masterlot using heparin-spiked blood samples of normal donors covering the whole measuring range. Thus, the relationship of CoaguChek aPTT Test to Actin FSL aPTT is transferred to each production lot.
Calibration interval may be extended based on acceptable verification of calibration by the laboratory.

Quality control
The CoaguChek Pro II meter has a number of inbuilt system checks. For details, please refer to the operator's manual. The test strip has an integrated quality control function. Quality control and system checks with test fluids are generally not required by the CoaguChek Pro II meter.
However, if your facility policy instructs you to carry out quality checks with test fluids, use CoaguChek aPTT Controls which are available in two levels.
The control intervals and limits should be adapted to each laboratory's individual requirements. Values obtained should fall within the defined limits. Each laboratory should establish corrective measures to be taken if values fall outside the defined limits.
Perform quality control with liquid controls according to the method sheet of the controls of both levels.
Follow the applicable government regulations and local guidelines for quality control.

Limitations – interference
Testing performed with the following in-vitro spiked samples or native blood samples indicated no significant effect on test results:
- Bilirubin up to 342 µmol/L (20 mg/dL)
- Hemolysis up to 0.24 mmol/L (400 mg/dL)
- Triglycerides up to 11.4 mmol/L (1000 mg/dL)
- Hematocrit ranges between 15 % and 55 %
- Ascorbic acid up to 50 mg/L

The CoaguChek aPTT Test is insensitive to low molecular weight heparins (LMWH) up to 0.5 IU/mL blood and should not be used for monitoring of these anticoagulants.
Note: Samples of patients treated with protamine sulfate can not be tested with this system.
Antiphospholipid antibodies (APA) such as Lupus antibodies (LA) may prolong the aPTT depending on the type and concentration of APAs. Anticoagulants other than unfractionated heparin (e.g. hirudin and other thrombin inhibitors, vitamin K antagonists, direct factor Xa-inhibitors) prolong aPTT. As the CoaguChek aPTT Test is not calibrated for these anticoagulant substances, it should not be used in patients treated with these anticoagulants.
Currently there is insufficient data available on the potential effects that therapeutic agents used in a perioperative or intensive care setting may have on the CoaguChek aPTT Test.
In patients with severe liver failure very high aPTT values may occur with CoaguChek aPTT.
Unexpected aPTT values should always be followed by additional testing to determine the source of the influence. For diagnostic purposes, the results should always be assessed in conjunction with the patient's medical history, clinical examination and other findings.
As aPTT is not a standardized test, results are not comparable among different aPTT assays.
Reference range and therapeutic range of the CoaguChek aPTT test may differ due to the variability of reagents and test instruments. It is not encouraged to proceed with comparison respectively repetition or even follow up measurements in variable applications on different system/reagent/method combinations. See summary.

Measuring range
20-130 plasma equivalent seconds. The CoaguChek aPTT shows a linear relationship to the heparin concentration in the sample up to 1.0 IU/mL blood.

Specific performance data

Expected values
Expected values were determined using fresh whole blood from normal volunteers and patients not under heparin therapy.

N	Median (s)	2.5th percentile (s)	97.5th percentile (s)
141	31.5	24.8	38.3

Factor sensitivity
In experiments with factor deficient plasmas CoaguChek aPTT was sensitive to activities ≤ 30 % of factor VIII, ≤ 20 % of factor IX and ≤ 40 % of factor XII.

Precision
Repeatability of CoaguChek aPTT Test was determined with venous whole blood samples at 4 external sites.[4]
- Results in seconds

Repeatability			
Range (s)	**Number of Runs**	**SD (s)**	**CV (%)**
≤ 38.3	61	0.8	2.4
> 38.3-≤ 47.1	65	0.7	1.5
> 47.1	66	1.3	2.1

Reproducibility of CoaguChek aPTT Test was determined using CoaguChek aPTT Controls at 4 external study sites. Controls were measured on 21 days in 2 runs per day and with 2 or 3 lots per study site. Reproducibility figures were calculated by ANOVA (Analysis of Variation).
- Results in seconds

Reproducibility			
aPTT QC Level	**Mean (s)**	**SD (s)**	**CV (%)**
Level 1	46.6	2.4	5.1
Level 2	66.4	4.4	6.6

Method comparison
Substantial equivalence to reference method[5]
In a study at 4 external sites fresh venous blood results with CoaguChek aPTT Test were compared to fresh venous blood results with the reference method Hemochron Jr. APTT. Number of samples measured: 351

Regression according to Passing/Bablok[6]: y = 0.75x + 7.0 s

Kendall's τ = 0.825

The CoaguChek aPTT values were between 20.6 and 126.0 s.

For further information, please refer to the appropriate meter manual and the Method Sheets of all necessary components.
A point (period/stop) is always used in this Method Sheet as the decimal separator to mark the border between the integral and the fractional parts of a decimal numeral. Separators for thousands are not used.

References

1 MedlinePlus Medical Encyclopedia: Partial thromboplastin time (PTT) 2009.
2 Basu D, Gallus A, Hirsh J, et al. Prospective study of the value of monitoring heparin treatment with the activated partial thromboplastin time. N Engl J Med. Aug 1972; 17; 287(7):324-327.
3 Hathaway WE, Assmuss SL, Montgomery RR, et al. Activated Partial Thromboplastin Time and Minor Coagulopathies. Am J clin Pathol 1979; 71:22-25.
4 Clinical and Laboratory Standards Institute. Evaluation of Precision of Quantitative Measurement Procedures; Approved Guideline - Third Edition. CLSI document EP05-A3. Clinical and Laboratory Standards Institute, 950 West Valley Road, Suite 2500, Wayne, Pennsylvania 19087 USA, 2014.
5 Clinical and Laboratory Standards Institute. Measurement Procedure Comparison and Bias Estimation Using Patient Samples; Approved Guideline - Third Edition. CLSI document EP09-A3. Clinical and Laboratory Standards Institute, 950 West Valley Road, Suite 2500, Wayne, Pennsylvania 19087 USA, 2013
6 Bablok W, Passing H, Bender R, et al. A general regression procedure for method transformation. Application of linear regression procedures for method comparison studies in clinical chemistry, Part III. J Clin Chem Clin Biochem 1988 Nov;26(11):783-790.
7 Statistical analysis report CoaguChek aPTT Test; add-on to RD001549; on file with Roche Diagnostics GmbH.

Symbols
Roche Diagnostics uses the following symbols and signs in addition to those listed in the ISO 15223-1 standard:

CONTENT	Contents of kit
SYSTEM	Analyzers/Instruments on which reagents can be used
REAGENT	Reagent
CALIBRATOR	Calibrator
→	Volume after reconstitution or mixing
GTIN	Global Trade Item Number

www.coaguchek.com

Roche Diagnostics GmbH, Sandhofer Strasse 116, D-68305 Mannheim
www.roche.com

2020-01 V3.0 CAN EN