Thrombin Time - 0009758515

ENGLISH - Insert revision 03/2005

Intended use

For the quantitative determination of Thrombin Time (TT) in human citrated plasma on IL Coagulation Systems.

Summary and principle

The TT assay is typically performed:

- for the evaluation of Disseminated Intravascular Coagulation (DIC)
- for the monitoring heparin anticoagulant and fibrinolytic therapy
- for the detection of the presence of FDP (Fibrin/Fibrinogen Degradation Products), hereditary or acquired qualitative and quantitative fibrinogen abnormalities and increased fibrinolysis.[1,2]

Fibrinogen in the test sample is converted to fibrin by the addition of purified bovine thrombin and the time required to form the clot is measured.

Composition

The **Thrombin Time** kit consists of:

B **Buffer** (Cat. No. 0009758521): 1 x 9 mL vial of concentrated solution containing calcium chloride (0.5 Mol/L), buffer and preservative.

T **Bovine thrombin** (Cat. No. 0009758520): 4 x 2, 5 or 8 mL vials of lyophilized bovine thrombin (15 UNIH/vial) with bovine albumin and buffer.

PRECAUTIONS AND WARNINGS:
Harmful if swallowed (R 22). Avoid contact with skin and eyes (S24/25). Do not empty into drains (S29). Wear suitable protective clothing (S36).
The Buffer contains sodium azide that may form explosive azides in metal plumbing. Use proper disposal procedures.
All animal products should be treated as potentially infectious.

This product is For *in vitro* Diagnostic Use.

Preparation

Buffer: Dilute the necessary quantity of concentrated Buffer 1:5 (1+4) with NCCLS Type II water or equivalent.[3] Mix before use.
Bovine thrombin: Depending on the source of the sample and the analytical application, dissolve the contents of each vial with:

	Diluted Buffer	Thrombin Concentration
Screening Test	5.0 mL	3.0 UNIH/mL
	8.0 mL	1.9 UNIH/mL
Heparin Therapy	2.0 mL	7.5 UNIH/mL

Replace the stopper and swirl gently. Make sure of the complete reconstitution of the product. Keep the reagent at 15-25°C for 30 minutes and invert to mix before use. Do not shake.

Reagent storage and stability

Unopened reagents are stable until the expiration date shown on the vial when stored at 2-8°C.
Diluted Buffer - Stability after preparation: 1 month at 15-25°C.
Bovine thrombin - Stability after reconstitution: 15 days at 2-8°C in the original vial, 8 hours at 15°C on the ACL® Classic, 8 hours at 15-25°C on the ACL 8000/9000/10000 or 24 hours at 15°C on the ACL Futura®/ACL Advance Systems and ACL TOP™. No stirring is required.

For optimal stability remove reagent from the system and store it at 2-8°C in the original vial.

Instrument/test procedures

Refer to the appropriate IL instrument's Operator's Manual and/or Application Manual for the complete assay procedure instructions.

NOTE: TT assay should be run in the Single Test Mode and the Needles Cleaning Procedure be performed after running the TT assay on the ACL Classic, and on the ACL 8000/9000/10000 for instruments with SW revisions below 2.0.

Specimen collection and preparation

Nine parts of freshly drawn venous blood are collected into one part of trisodium citrate. Refer to NCCLS Document H21-A4 for further instructions on specimen collection, handling and storage.[4]

Additional reagents and control plasmas

The following are not supplied with the kit and must be purchased separately.

	Americas and Pacific Rim Cat. No.	Europe Cat. No.
Calibration plasma	0020000000	0008467300
Normal Control	0020003120	0020003110
Low Abnormal Control	0020003220	0020003210
Cleaning solution	0009831700	0009831700

Quality control

Normal and abnormal controls are recommended for a complete quality control program.[5] Normal Control and Low Abnormal Control are designed for this program. Each laboratory should establish its own mean and standard deviation and should establish a quality control program to monitor laboratory testing. Controls should be analyzed at least once every 8 hour shift in accordance with good laboratory practice. Refer to the instrument's Operator's Manual for additional information. Refer to Westgard *et al* for identification and resolution of out-of-control situations.[6]

Results

Patient results may be reported in seconds and ratio. Refer to the instrument's Operator's Manual for additional information.

Limitations/interfering substances

TT results may be affected by many commonly administered drugs and further studies should be made to determine the source of unexpected abnormal results.
No interference on the ACL Futura/ACL Advance Systems up to:

Reagent preparation	Hemoglobin	Triglycerides	Bilirubin
5 mL	500 mg/dL	1000 mg/dL	20 mg/dL
8 mL	500 mg/dL	500 mg/dL	20 mg/dL
2 mL	*	1000 mg/dL	10 mg/dL

No interference on the ACL TOP up to:

Reagent preparation	Hemoglobin	Triglycerides	Bilirubin
5 mL	500 mg/dL	*	24 mg/dL
8 mL	500 mg/dL	*	13 mg/dL
2 mL	*	*	7 mg/dL

* The presence of hemolysis and/or lipemia is unacceptable with this assay.

Expected values

A normal range study was performed using Thrombin Time reagent.

Assay	System	N	Range (units)
5 mL	ACL Family	43	11.0 - 17.8 (seconds)
	ACL Futura/ACL Advance	43	11.8 - 17.6 (seconds)
	ACL TOP	120	10.3 - 16.6 (seconds)
8 mL	ACL Family	43	16.0 - 26.1 (seconds)
	ACL Futura/ACL Advance	43	17.2 - 26.7 (seconds)
	ACL TOP	119	15.8 - 24.9 (seconds)
2 mL	ACL Family	43	4.9 - 6.9 (seconds)
	ACL Futura/ACL Advance	43	5.1 - 6.5 (seconds)
	ACL TOP	120	4.8 - 7.2 (seconds)

Ranges were calculated as recommended by the International Federation of Clinical Chemistry (IFCC).[7] These results were obtained using a specific lot of reagent. Due to many variables which may affect clotting times, each laboratory should establish its own normal range.

Performance characteristics

Precision:
Within run and total (run to run and day to day) precision was assessed over multiple runs using both normal and abnormal samples.

ACL Futura/ ACL Advance	Mean TT 2 mL (seconds)	CV % (Within run)	CV % (Total)
Normal Control	6.6	1.9	3.1
Low Abnormal Control	9.7	2.3	3.9

ACL TOP	Mean TT 2 mL (seconds)	CV % (Within run)	CV % (Total)
Normal Control	7.0	2.3	3.8

ACL Family	Mean TT 5 mL (seconds)	CV % (Within run)	CV % (Total)
Normal Control	13.0	1.54	3.17
Low Abnormal Control	20.3	2.71	3.75

ACL Futura/ ACL Advance	Mean TT 5 mL (seconds)	CV % (Within run)	CV % (Total)
Normal Control	16.4	2.1	3.7
Low Abnormal Control	20.4	5.7	6.3

ACL TOP	Mean TT 5 mL (seconds)	CV % (Within run)	CV % (Total)
Normal Control	15.5	1.2	2.9
Low Abnormal Control	19.2	1.8	3.0

ACL Family	Mean TT 8 mL (seconds)	CV % (Within run)	CV % (Total)
Normal Control	19.3	2.60	3.79

ACL Futura/ ACL Advance	Mean TT 8 mL (seconds)	CV % (Within run)	CV % (Total)
Normal Control	25.1	2.4	3.1
Low Abnormal Control	30.1	6.0	6.2

ACL TOP	Mean TT 8 mL (seconds)	CV % (Within run)	CV % (Total)
Normal Control	23.5	1.4	4.3
Low Abnormal Control	28.6	1.6	4.7

Correlation:

Assay	system	slope	intercept	r	Reference method
TT (5 mL)	ACL Family	0.972	0.514	0.989	TT reagent on ACL
TT (8 mL)	ACL Family	0.981	0.128	0.975	TT reagent on ACL
TT (5 mL)	ACL Futura/ ACL Advance	0.968	1.22	0.930	HemosIL TT on ACL
TT (8 mL)	ACL Futura/ ACL Advance	0.891	3.79	0.860	HemosIL TT on ACL
TT (2 mL)	ACL TOP	1.029	0.035	0.987	HemosIL TT on ACL Advance
TT (5 mL)	ACL TOP	0.904	0.80	0.983	HemosIL TT on ACL Advance
TT (8 mL)	ACL TOP	1.015	-1.34	0.980	HemosIL TT on ACL Advance

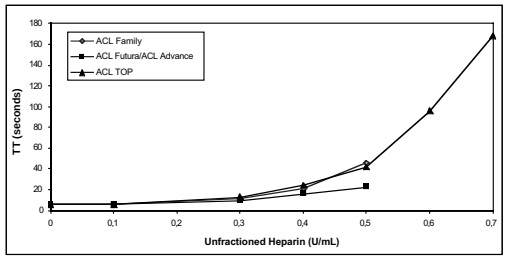
These precision and correlation results were obtained using specific lots of reagents and controls.

Heparin Therapy

Therapeutic range: 0.2-0.4 U/mL

Heparin Dose-Response curve example

The curve below is only an example obtained using one lot of TT reagent and one Normal Plasma Pool spiked with graduated quantities of Unfractionated Heparin.



Due to many variables (i.e. different source of heparin) which may affect the clotting times, each laboratory should establish its own heparin therapeutic range.

For further indications on therapeutic ranges and duration of treatment make reference to local guidelines.

Bibliography / Literatur / Bibliografía / Bibliographie / Bibliografia /Bibliografia / Litteratur / Litteraturförteckning / Βιβλιογραφία

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Issued March 2005
Printed in U.S.A.

Symbols used / Verwendete Symbole / Símbolos utilizados / Symboles utilisés / Simboli impiegati / Símbolos utilizados / Anvendte symboler / Använda Symboler / Χρησιμοποιηθέντα σύμβολα

In vitro diagnostic medical device
In-vitro Diagnostikum
De uso diagnóstico *in vitro*
Dispositif mèdical de diagnostic *in vitro*
Per uso diagnostico *in vitro*
Dispositivo médico para utilização em diagnóstico *in vitro*
"in vitro" diagnostisk udstyr
In vitro diagnostisk medicinsk produkt
Προϊόν για διαγνωστική χρήση *In vitro*

Batch code
Chargen-Bezeichnung
Identificación número de lote
Désignation du lot
Numero del lotto
Número de lote
Batch nr.
Tillverkningskod
Αρ. Παρτίδας

Use by
Verwendbar bis
Caducidad
Utilisable jusqu'à
Da utilizzare prima del
Data límite de utilização
Anvendelse
Användning
Χρήση έως

Temperature limitation
Festgelegte Temperatur
Temperatura de Almacenamiento
Températures limites de conservation
Limiti di temperatura
Límite de temperatura
Temperatur begrænsninger
Temperatur gräns
Περιορισμοί θερμοκρασίας

Consult instructions for use
Beilage beachten
Consultar la metódica
Lire le mode d'emploi
Vedere istruzioni per l'uso
Consultar as instruções de utilização
Se vejledning for anvendelse
Ta del av instruktionen före användning
Συμβουλευτήτε τις οδηγίες χρήσης

Control
Kontrollen
Control
Contrôle
Controllo
Controlo
Kontrol
Kontroll
Υλικό ποιοτικού ελέγχου

Biological risks
Biologisches Risiko
Riesgo biológico
Risque biologique
Rischio biologico
Risco biológico
Miljø oplysninger
Biologiska risker
Βιολογικοί κίνδυνοι

Manufacturer
Hergestellt von
Fabricado por
Fabricant
Prodotto da
Fabricado por
Producent
Tillverkare
Κατασκευαστής

Authorised representative
Bevollmächtigter
Representante autorizado
Mandataire
Rappresentanza autorizzata
Representante autorizado
Leverandør
Auktoriserad representant
Εξουσιοδοτημένος αντιπρόσωπος