

# BE PT HI Thromboplastin high ISI

Reagent for determination of Prothrombin time (PT) in human plasma

REF 771150: RE (5 x 5 mL), DIL (2 x 15 mL)  
REF 771151: RE (8 x 12 mL), DIL (8 x 12 mL)

## PRINCIPLE (4)

Quick method: tissue thromboplastin and calcium are added to citrated plasma, activating the factors of extrinsic coagulation pathway. The clotting time (time to formation of a fibrin clot) is measured at 37°C.

## CLINICAL SIGNIFICANCE (1) (6) (7)

The Prothrombin Time is used as a screening test to detect disorders in the extrinsic coagulation pathway.

The results in seconds are converted into percentages to evaluate the prothrombinic activity in comparison to a reference plasma consider as 100%.

A deficient prothrombinic activity can occur in the following cases:

Hepatic disease; Hemorrhagic disease of new born; Congenital factor deficiency (factors II, V, VII or X); Vitamin K deficiency; Vitamin K antagonist treatment; Circulating anticoagulants; Fibrinolysis; Disseminated intravascular coagulation (DIC)

The results in seconds are converted into INR (International Normalized Ratio) in the particular use of monitoring oral anticoagulant therapy (Vitamin K antagonists).

## REAGENTS

RE PT HI Reagent

Thromboplastin (lyophilized from rabbit brain).

DIL PT Diluent Diluent

Hepes buffer, calcium.

According to 1272/2008 regulation, these reagents are not classified as dangerous

## SAFETY CAUTIONS

Behnk reagent kits are designated for professional in vitro diagnostic use.

Good Laboratory Practices must be applied during use of reagents, reference or control plasmas, and human samples and should be handled as potentially infectious.

For further information, Material Safety datasheet is available upon request.

Dispose of waste in accordance with the local regulations.

## PREPARATION OF REAGENTS

RE: Add promptly into RE the amount of DIL indicated on the label of RE.

Cap vials and mix gently the RE vial until complete dissolution.

DIL: Ready to use

## STABILITY AND STORAGE

Unopened vials stored at 2-8 °C are stable until the expiry date stated on the label.

RE: after reconstitution the working reagent is stable 5 days at 2-8 °C, or 6 h at 37 °C.

DIL: once opened, if stored at 2-8 °C and free from contamination, contents of the vial is stable until the expiry date stated on the label.

Discard any reagent: after expiry date.

## SAMPLES COLLECTION AND HANDLING (2) (8)

Plasma from careful venipuncture with anticoagulant ratio of 1/10 (trisodium citrate solution 0.109 M). Mix immediately the blood with anticoagulant.

Avoid drawing with a syringe that could result in the formation of micro-clots.

Centrifuge 10 minutes at 2500 g.

The specimen is stable 4 hours after collection, at room temperature (15-25 °C).

Collection on Citrate Hepes tube increases the sample stability to 8 hours.

## LIMITS (2) (3)

Samples, contaminated by thromboplastin or hemolysis may shorten the clotting time.

For a more comprehensive review of factors affecting this assay, refer to the publication of Young D.S.

## MATERIAL REQUIRED BUT NOT PROVIDED

Basic medical analysis laboratory equipment

Automated or semi-automated Coagulation analyzer

REF 050813: Magnetic stirrers 8 x 1.5 mm, for Behnk Thrombolyzer series.

## EXPECTED VALUES (2) (6)

PT (sec): the results are usually between 11 and 16 sec.

PT (%) : Normal values 70 % to 100 %. Values over 100 % are considered as normal

PT (INR): Each laboratory should establish its own reference range of expected values.

## QUALITY CONTROL

REF 773100: BE Trol 1; REF 773101: BE Trol 2

Controls are required for checking the accuracy and reproducibility of the results.

The control intervals should be adapted to each laboratory's individual requirements.

Values obtained should fall within the defined limits.

Follow the applicable government regulations and local guidelines for quality control.

## PROCEDURE

### Manual method on semi-automated systems:

Pre-incubate reagent 15 min to reach a temperature of 37 °C and mix gently before use:

• Plasma: 100 µL

Incubate for 120 sec at 37 °C

• Thromboplastin (37 °C): 200 µL

The automatic countdown timer will start immediately after Thromboplastin addition and stop when the clot is formed.

### Automated method on Behnk Thrombolyzer series

Refer to the full detailed application specific to the automated system.

#### Note:

- Performances and stability data have been validated on Thrombolyzer Compact X (available on request).
- With manual procedure and on other automated coagulation analyzer, performances and stability data must be validated by user.
- Other validated applications or proposal applications are available on request.

## CALIBRATION

### PT INR and PT % with Calibrator Set

Use calibrator set REF 775200: BE Cal Set traceable to RBT16 (WHO International Standard Thromboplastin, Rabbit plain).

- Automated method on Behnk Thrombolyzer series: Perform a calibration with BE Cal Set.

- Manual method on semi-automated systems (PT %): Prepare a calibration curve with Cal1, Cal2, Cal3. Measure in triplicate the clotting time of each level.

### PT INR with MNPT and ISI (all methods)

• MNPT (Mean Normal Prothrombin Time)

To determine the MNPT prepare a pool of freshly collected normal plasmas. Measure in triplicate the clotting time and calculate the mean.

- ISI (International Sensitivity Index): Refer to the specific batch table.

## CALCULATION (6)

### PT INR and PT % with Calibrator Set

- Automated method on Behnk Thrombolyzer series:

PT INR and PT % will be calculated automatically according to two calibration curves.

- Semi-automated systems: Enter the mean of the clotting time found for each BE Cal Set plasma and the corresponding PT % in the system. PT % concentration will be calculated automatically according to calibration curve.

### PT INR with MNPT and ISI (all methods)

The MNPT and ISI are to be used to calculate result in INR.

• Calculate INR as follows:  $INR = (Patient\ time / MNPT)^{ISI}$

- Refer to enclosed batch specific table, selecting the suitable column according to the MNPT. Identify the raw corresponding to patient's result and refer to the result in PT % and PT INR indicated in column "%" and "INR".

- For semi-automated systems and Behnk Thrombolyzer series the INR will be calculated automatically after input in the system.

## PERFORMANCES

The within run and between run studies were performed with normal and abnormal plasma on Thrombolyzer Compact X:

Within run N = 20	Normal Plasma	High Plasma	Between run N = 20	Normal Plasma	High Plasma
	Mean (%)	91.3		36.6	Mean (%)
S.D. (%)	0.96	0.60	S.D. (%)	1.85	1.12
C.V. %	1.05	1.63	C.V. %	2.03	3.16

Comparison with commercially available reagent, same method: 163 plasmas located between 14% and 110%:

$$y = 1.083-1.4719x \quad r = 0.9897$$

### Interferences on PT (sec, INR):

Turbidity	No interference up to 774 mg/dL of Triglycerides
Low Molecular weight heparin	Positive interference from 0.114 IU anti Xa
Bilirubin	Positive interference from 162 µmol/L
Hemoglobin	No interference up to 258 µmol/L

Other substances may interfere with the results (see § Limits)

### Calibration Stability:

Make a new calibration when changing reagent batch, if quality control results are found out of the established range and after maintenance operations.

## REFERENCES

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- (2) Clinical Guide to Laboratory Test, 3<sup>rd</sup> Ed., N.W. TIETZ (1995) p.526-529
- (3) YOUNG D.S., Effect of Drugs on Clinical Laboratory Tests, 4<sup>th</sup> Ed. (1995) p.3-513 à 3-517
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