

- C. Some modifications of the Ellis method are sensitive to heparin and may yield falsely low values in specimens containing heparin

## REFERENCES

1. Clauss A: Gerinnungs physiologische schell methode zur bestimmung des fibrinogens. Acta Hematol 17:237-246, 1957.
2. Ellis BC, Stransky A: A quick and accurate method for the determination of fibrinogen in plasma. J Lab Clin Med 58:477-488, 1961.
3. Goodwin JF: An evaluation of technics for the separation and estimation of plasma fibrinogen. Clin Chem 11:63-73, 1965.
4. Ratnoff OD, Menzie C: A new method for the determination of fibrinogen in small samples of plasma. J Lab Clin Med 37:316-320, 1951.

## Thrombin Time (TT)

### I. USES:

- A. To document the presence of heparin:
    1. A prolonged TT which corrects with the addition of protamine sulfate
    2. A prolonged TT in a sample with a normal reptilase time
  - B. The diagnosis of dysfibrinogenemia when performed in combination with a reptilase time
  - C. Monitoring thrombolytic therapy (in some protocols)
  - D. The diagnosis of afibrinogenemia or hypofibrinogenemia (congenital or acquired), when performed in conjunction with fibrinogen assays
- II. PRINCIPLE OF TEST: Thrombin is incubated with the patient's plasma and the time to clot is measured.
- III. PATIENT PREPARATION; COLLECTION/HANDLING OF SPECIMEN: No patient preparation need-

ed. Venous blood is collected in citrate. DO NOT COLLECT BLOOD THROUGH A HEPARIN LOCK OR OTHER HEPARINIZED LINE. Any clot in the specimen is cause for rejection.

## IV. PROCEDURE

### A. Reagents/Materials

1. Fibrometer (BBL) with attached heat block
2. Thrombin- diluted according to package insert (General Diagnostics Fibriquik ). Units of thrombin not specified; therefore method below requires use of this thrombin reagent.
3. Normal plasma (see reagents)

### B. Method

1. Add 3.0 ml distilled water to vial of thrombin and mix well for complete rehydration
2. Prewarm thrombin in Fibrometer well (37°C) for at least 2 minutes, but not more than 10 minutes
3. Add 0.2 ml of patient sample or control plasma to fibrometer well and allow to warm to 37°C for 2 minutes.
4. Add 0.2 ml of the thrombin, activating the Fibrometer at the same time and begin timing

C. Calculations: none required; the time to clot formation is expressed in seconds

D. Normal Range: less than 17 seconds

## V. COMMENTS

- A. TT is very sensitive to the presence of therapeutic concentrations of heparin, which may result in a marked prolongation of the TT.
- B. TT is usually prolonged in the presence of increased FDP.
- C. TT is often prolonged in the presence of a paraprotein.
- D. If the TT is prolonged, performance of the Reptilase Time may be of value in determining the cause of the prolongation (see Reptilase Time).

**REFERENCE**

1. Latallo ZS: Thrombin clotting assays. In Bang NU, Beller FK, Deutsch E, Mammen EF (eds): Thrombosis and Bleeding Disorders: Theory and Methods, p 183. Academic Press, New York, 1971.

**Reptilase Time**

- I. **USES:** In the presence of a prolonged thrombin time, the reptilase time (RT) is useful in:
  - A. The diagnosis of dysfibrinogenemia
  - B. The diagnosis of hypofibrinogenemia
  - C. Documenting the presence of heparin
- II. **PRINCIPLE OF TEST:** Plasma is incubated with "Reptilase-R" and the time to clot formation is measured. Reptilase-R is a thrombin-like enzyme that differs from thrombin in its specificity and extent of cleavage of the fibrinogen molecule; Reptilase R cleaves only fibrinopeptide A, whereas thrombin cleaves fibrinopeptides A and B. Reptilase-R is inhibited only slightly or not at all by heparin and fibrin degradation products (FDP), thus making it useful in the differential diagnosis of a prolonged thrombin time (TT).
- III. **PATIENT PREPARATION; COLLECTION/HANDLING OF SPECIMEN:** No patient preparation needed. Venous blood is collected in citrate (blue top Vacutainer tube) and preserved on ice until the time of testing. **DO NOT COLLECT BLOOD THROUGH A HEPARIN LOCK OR OTHER HEPARINIZED LINE.** Any clot present in the specimen is cause for rejection.
- IV. **PROCEDURE**
  - A. Reagents/Materials
    1. Fibrometer with attached heat block