**Prothrombin time**

**(PT)**

**Prothrombin time(PT):-Is ablood test that measures the time it takes for the liquid portion(plasma) of the blood to clot.**

***Introduction and principle***

**In the 'presence of calcium,thromboplastin is the cofactor of factor V which activates the extrinsic coagulation pathway. Coagulation begins after adding thromboplastin to a normal citrated plasma which ends within few seconds with the formation of fibrin clot.**

***Objectives***

**To estimate the length of time taken for the plasma to clot in the presence of excess thromboplastin and calcium.**

***Normal range***

**11-16 seconds**

**Increased of prothrombin time may due to :-**

**1- Bile duct obstruction.**

**2-Cirrhosis.**

**3-Disseminated intravascular coagulation.**

**4-Hepatitis.**

**5-Malabsorption.**

**6-Vitamin K deficiency.**

**Methods  
  
1-Manual method.  
2- Automated system.**

**Manual Method   
Material And Instruments  
1- Thromboplastin — calcium reagent which is commercially available.  
2-Water bath, 37°C.  
3- Test tubes, 13 x 100 mm.  
4- Stopwatch.  
5- Sodium citrate ( 3.8 %) as anticoagulant, 0.5 mL of sodium citrate added to 4.5 mL of whole blood.  
6- Centrifuge.  
7- Micropipettes, 0.1 mL, 0.2 mL**

**Procedure**

**1- Centrifuge anticoagulated blood at 1200 -1500 g for 15 minutes.**

**2-Separate the plasma for patient and control RBC's and store at room temperature until ready for testing, perform the test within 4 hours of blood collection.**

**3- Prepare thromboplastin-calcium reagent which is available commercially.**

**4- Pipette 0.2 mL of thromboplatin-calcium reagent into the duplicate test tubes Warm the test tubes in the water bath for 10-15 minutes.**

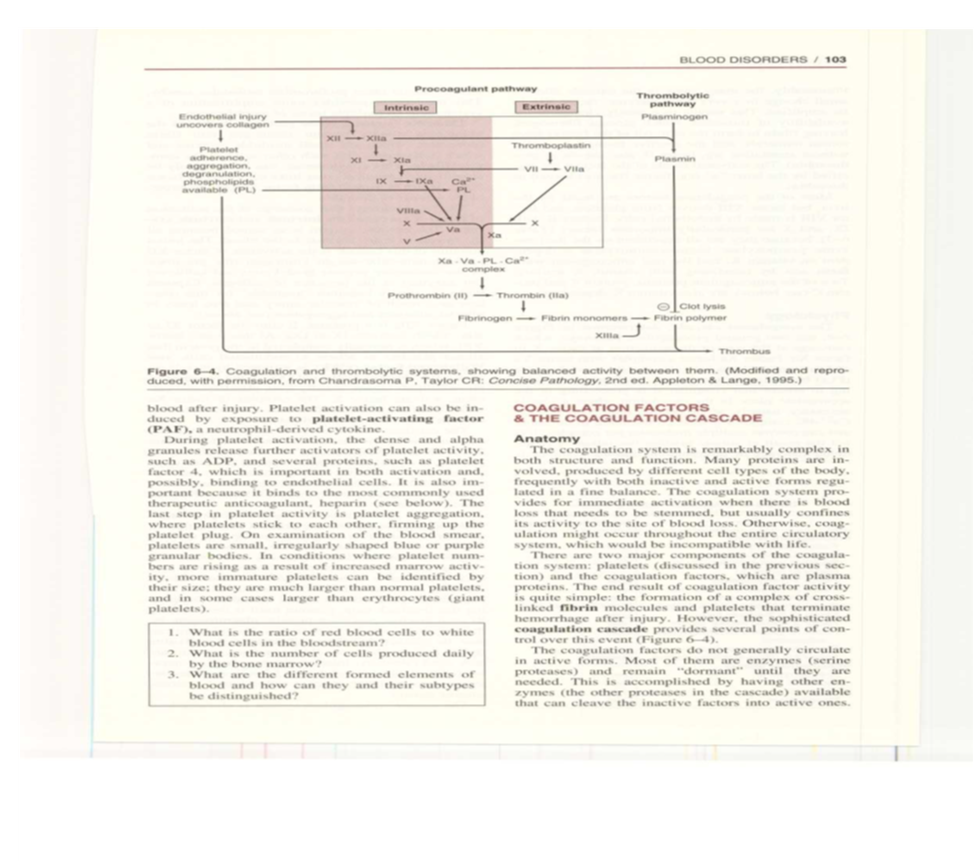
**5- Incubate the plasma at 37°C for 2-3 minutes.**

**6- Pipette 0.1 mL of patients plasma into the duplicate test tubes containing 0.2 mL of thromboplastin-calcium reagent and simultaneously start the stopwatch.**

**7- Mix the contents of the tubes, remove the tubes from the water bath wipe and dry. Gently tilt the tube back and forth until a clot forms, at which point timing is stopped.**

**8- Average the two results and; report the patient's results along with the normal range for the test as performed in your laboratory.**

**9- Normal values depend on thromboplastin used, the exact technique and whether visual or instrument end-point reading should determine its normal range.**

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