

Intra vascular anti-coagulants

1. Endothelial surface factors
 - a. Smoothness of the endothelial cell surface
 - b. Glycocalyx
 - c. Thrombomodulin and its complex with thrombin activates protein C which inactivates factors V and V111
 2. Fibrin fibers
 3. Antithrombin 111 combines with thrombin and inactivates thrombin in 15 to 20 minutes
 4. Heparin Antithrombin 111 complex also removes factors IX,X, XI and XII
-

Conditions causing excessive Bleeding

1. Liver Diseases e.g. Hepatitis, Cirrhosis etc
2. Vitamin K deficiency (Factors II,VII,IX and X)
 - Gastrointestinal diseases causing poor absorption of fat
 - Failure of liver to secrete bile
 - Resection of intestine
3. Thrombocytopenia --- purpura
4. Hemophilia

Causes of Thromboembolism

1. Roughened vessel wall e.g. atherosclerosis
2. Slow movement of blood --- Femoral venous thrombosis and massive pulmonary embolism
3. Bacterial infections e.g. Septic shock or widespread tissue damage causing release of tissue thromboplastin----- disseminated intravascular coagulation

Extra vascular coagulation

1. Siliconized containers
2. Heparin
3. Decrease in concentration of calcium ions

Anti coagulants for clinical use

1.Heparin

2.Coumarins e.g warfarin