

# **FIBRINOLYTICS**

## **(Thrombolytics)**

# Thrombolytics

**Streptokinase, Urokinase, Alteplase (rt-PA), Reteplase**

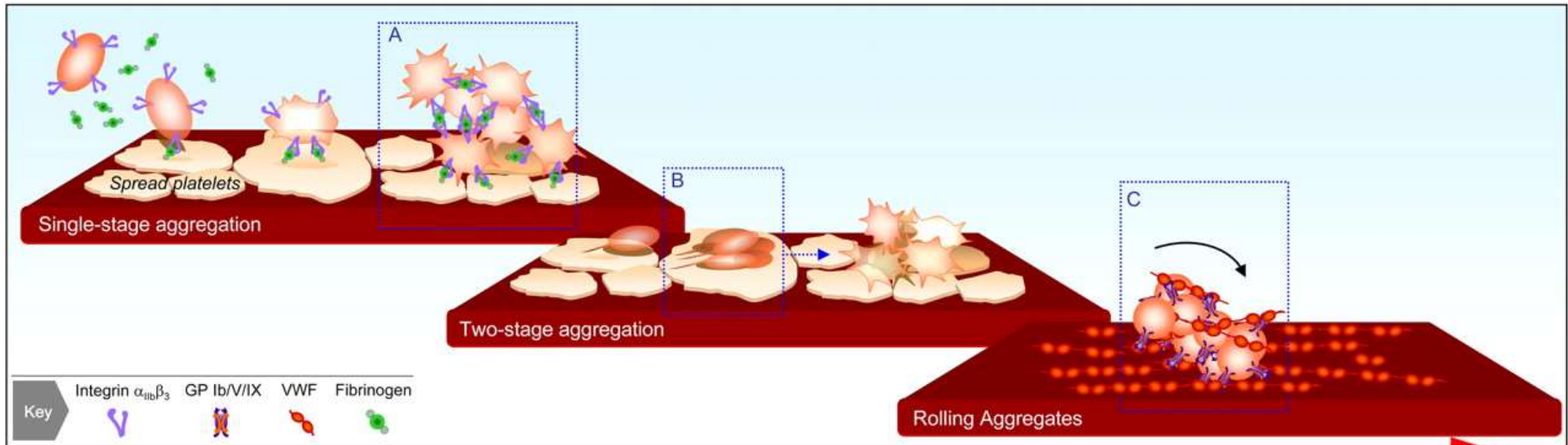
**Tenecteplase:**

- These are drugs used to lyse thrombi/clot to recanalize occluded blood vessels (mainly coronary artery).
- **Streptokinase** is a protein synthesized by *Streptococci* that combines with the proactivator plasminogen.
- **Urokinase** is a human enzyme synthesized by the kidney that directly converts plasminogen to active plasmin.

# Thrombolytics

Streptokinase, Urokinase, Alteplase (rt-PA), Reteplase  
Tenecteplase:

- **Uses of fibrinolytics:**
- Administration of fibrinolytic drugs by the i.v. route is indicated in cases of **pulmonary embolism with hemodynamic instability, severe deep venous thrombosis** such as the **superior vena caval syndrome**, and **ascending thrombophlebitis** of the iliofemoral vein with **severe lower extremity edema**.
- These drugs are also given intra-arterially, especially for peripheral vascular disease.



Characteristic Features:	A	B	C
Adhesion Receptor	Integrin $\alpha_{IIb}\beta_3$	Integrin $\alpha_{IIb}\beta_3$ , GP Ib/V/IX	GP Ib/V/IX
Activation-dependent	Yes	Yes	No
Tether formation	No	Yes	Yes
Ligand	Fibrinogen	VWF, Fibrinogen, Fibronectin	VWF
Platelet Morphology	Sphere and filopodia	Discoid	Smooth Spherical

# Platelet aggregation inhibitors

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## Aspirin:

- Platelet aggregation inhibitors decrease the formation of a platelet-rich clot or decrease the action of chemical signals that promote platelet aggregation.
- The platelet aggregation inhibitors described below inhibit cyclooxygenase-1 (COX-1) or block GP IIb/IIIa or ADP receptors, thereby interfering with the signals that promote platelet aggregation.
- **Use:** Aspirin is used in the prophylactic treatment of transient cerebral ischemia.

# Platelet aggregation inhibitors

## Ticlopidine, clopidogrel, prasugrel, and ticagrelor:

- These drugs inhibit the binding of ADP to its receptors on platelets and, thereby, inhibit the activation of the GP IIb/IIIa receptors required for platelets to bind to fibrinogen and to each other. Ticagrelor binds to the P2Y<sub>12</sub> ADP receptor in a reversible manner.
- **Use:** **Clopidogrel** is approved for prevention of atherosclerotic events in patients with a recent MI or stroke and for prophylaxis of thrombotic events in acute coronary syndromes.

# Platelet aggregation inhibitors

## Ticlopidine, clopidogrel, prasugrel, and ticagrelor:

- **Use:** **Ticlopidine** is indicated for the prevention of transient ischemic attacks and strokes in patients with a prior cerebral thrombotic event. It is generally reserved for patients who are intolerant to other therapies.
- **Prasugrel** is approved to decrease thrombotic cardiovascular events in patients with acute coronary syndromes.
- **Ticagrelor** is approved for the prevention of arterial thromboembolism in patients with unstable angina and acute MI.

# Platelet aggregation inhibitors

## Abciximab, eptifibatide, and tirofiban:

- A chimeric monoclonal antibody, abciximab, eptifibatide inhibits the glycoprotein IIb/IIIa receptor complex.
- **Use:** These agents are given intravenously, along with heparin and aspirin, as an adjunct to percutaneous coronary intervention (PCI) for the prevention of cardiac ischemic complications.