

Factor Xa (Bovine)

1.00 mg

Ref#: BF10A

Lot#: xxxxxx

Exp. Date: xxxx-xx



For Research Use Only
Not for Use in Diagnostic Procedures
For *in vitro* use only

Description:	Factor Xa (Bovine)
Format:	Lyophilized in 20 mM Tris-HCl / 0.7 M NaCl / pH 7.3
Host:	Bovine
Storage:	Store between +2 and +8°C After reconstitution aliquot and freeze at ≤ -60°C
Reconstitution:	We recommend hydrating the protein with sterile water to the original volume
Volume:	Vial containing 0.840 mL
Total Protein:	1.00 mg
Concentration:	1.19 mg/mL before lyophilisation by Absorbance; Extinction Coefficient $E^{1\%}_{280} = 12.4$
Activity:	219.75 Plasma IU/mg
Molecular weight:	45,300 daltons

Factor X (FX, Stuart Factor) is a vitamin K-dependent glycoprotein produced in the liver. The concentration in plasma is ~10 µg/mL (~170 nM). FX is expressed as a two-chain molecule with a molecular weight of 55 kDa. The light chain contains a calcium-binding domain consisting of one hydroxy-aspartic acid and 11 γ-carboxyglutamic acid (gla) residues. These residues allow FX to bind to membranes that contain acidic phospholipids in a calcium dependent manner. This is followed by two EGF-like domains. The heavy chain consists of the catalytic domain, carbohydrate and the activation peptide. Activation to the active enzyme (FXa) results from cleavage at residue Arg52 in the heavy chain by a complex of FIXa, cofactor VIIIa, calcium and negatively charged phospholipid surface, or by the FVIIa-tissue factor complex. Factor Xa is the enzyme component in the prothrombinase complex (FXa, FVa, negatively charge cell membrane and calcium ion), which catalyzes the conversion of prothrombin to thrombin. Although FXa alone can convert prothrombin to thrombin, assembly of the prothrombinase complex results in a 300,000-fold increase in the rate of prothrombin conversion. FXa activity is down-regulated by inactivation of the cofactor, FVa or by direct inhibition of FXa by its principal inhibitor Antithrombin III.

Bovine Factor Xa is prepared from bovine Factor X by activation with Russell's Viper Venom. This RVV-X is removed after activation. Complete activation is observed by SDS-PAGE. Factor Xa along with cofactor Va, phospholipids and calcium ions, (the prothrombinase complex) catalyzes the rapid conversion of prothrombin to thrombin.

All bovine material is from USDA inspected herd pre and post mortem. All material is from U.S. cows <= 30 months age.