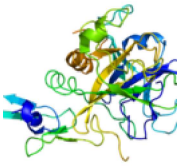
Coagulation factor X human

IDENTIFICATION

Name	Coagulation factor X human
Accession Number	DB13148
Type	Biotech
Groups	Approved, Investigational
Biologic Classification	Protein Based Therapies Blood factors
Description	Coagulation Factor X (Human), is a plasma-derived human blood coagulation factor is used by adults and children (aged 12 years and above) with hereditary Factor X deficiency. However its use is limited in the perioperative setting for the management of bleeding in major surgery in patients with moderate and severe hereditary Factor X deficiency. Coagulation Factor X is a vitamin K-dependent, liver-produced serine protease that serves as the first enzyme in the coagulation cascade to form fibrin. It is a two-chain glycoprotein with the molecular weight of approximately 59 kDa [2]. While Factor X normally circulates in the plasma as inactive molecules, the activation of Factor X is involved in both the intrinsic and extrinsic coagulation pathways. Inherited factor X deficiency is a rare autosomal recessive bleeding disorder that is estimated to occur in 1:1 000 000 individuals up to 1:500 carriers [1]. Administration of coagulation Factor X from healthy donor serves to restore and achieve effective hemostasis. Coagulation Factor X (Human) solution is approved by the FDA for intravenous injection under the market name Coagadex which contains normally 100 IU/mL of coagulation Factor X derived from healthy donors who have passed viral screening tests [Label].
Protein structure	
Protein chemical formula	Not Available
Protein average weight	59000.0 Da
Sequences	Not Available
Synonyms	Coagulation factor X Coagulation factor X (human) Factor X Factor X (stuart prower factor) Human coagulation factor X

Drugs

NAME	DOSAGE	STRENGTH	ROUTE	LABELLER	MARKETING START	MARKETING END	
Coagadex	Kit	100 [iU]/1mL		Bio Products Laboratory Limited	2015-10-21	Not applicable	
Coagadex	Kit	100 [iU]/1mL		Bio Products Laboratory Limited	2015-10-21	Not applicable	

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Mixture Products

Show 10 entries

Search

NAME	INGREDIENTS	DOSAGE	ROUTE	LABELLER	MARKETING START	MARKETING END	
Beriplex P/n 1000	Coagulation factor X human (2040 unit) + Coagulation Factor IX Human (1240 unit) + Coagulation factor VII human (1000 unit) + Protein C (1640 unit) + Protein S human (1360 unit) + Prothrombin (1600 unit)	Powder, for solution	Intravenous	CsI Behring	2013-11-21	Not applicable	
Beriplex P/n 500	Coagulation factor X human (1020 unit) + Coagulation Factor IX Human (620 unit) + Coagulation factor VII human (500 unit) + Protein C (820 unit) + Protein S human (680 unit) + Prothrombin (800 unit)	Powder, for solution	Intravenous	CsI Behring	2011-07-28	Not applicable	
Kcentra	Coagulation factor X human (1520 U/40mL) + Coagulation	Kit		CSL Behring GmbH	2013-12-13	Not applicable	

NAME	INGREDIENTS	DOSAGE	ROUTE	LABELLER	MARKETING START	MARKETING END
	Factor IX Human (1020 U/40mL) + human (700 U/40mL) + Protein C (1240 U/40mL) + Protein S human (920 U/40mL) + Prothrombin (1180 U/40mL)					
Kcentra	Coagulation factor X human (760 U/20mL) + Coagulation Factor IX Human (510 U/20mL) + Coagulation factor VII human (350 U/20mL) + Protein C (620 U/20mL) + Protein S human (460 U/20mL) + Prothrombin (590 U/20mL)	Kit		CSL Behring GmbH	2013-04-29	Not applicable
Octaplex	Coagulation factor X human (600 unit) + Coagulation Factor IX Human (500 unit) + Coagulation factor VII human (480 unit) + Protein C (620 unit) + Protein S human (640 unit) + Prothrombin (760 unit)	Kit; Powder, for solution	Intravenous	Octapharma Pharmazeutika Produktionsges M B H	2008-07-08	Not applicable
Octaplex	Coagulation factor X human (1200 unit) + Coagulation	Kit; Powder, for solution	Intravenous	Octapharma Pharmazeutika Produktionsges M B H	2015-08-11	Not applicable

NAME	INGREDIENTS	DOSAGE	ROUTE	LABELLER	MARKETING START	MARKETING END
	Factor IX Human (1000 unit) + human (960 unit) + Protein C (1240 unit) + Protein S human (1280 unit) + Prothrombin (1520 unit)					

Drugs

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Categories	Amino Acids, Peptides, and Proteins Biological Factors Blood and Blood Forming Organs Blood Coagulation Factors Blood Proteins Hemostatics Increased Coagulation Activity Proteins
UNII	0P94UQE6SY
CAS number	Not Available

PHARMACOLOGY

Indication	Indicated in adults and children (aged 12 years and above) with hereditary Factor X deficiency for on-demand treatment and control of bleeding episodes, or for perioperative management of bleeding in patients with mild hereditary Factor X deficiency [Label].
Associated Conditions	Bleeding caused by Factor X Deficiency Perioperative bleeding caused by Factor X Deficiency Vitamin K antagonist induced major bleeding
Pharmacodynamics	Clinical human coagulation Factor X solution increases plasma levels of Factor X and can temporarily correct the coagulation defect in these patients, as reflected by decrease in the activated Partial Thromboplastin Time (aPTT) and prothrombin time (PT) [Label].
Mechanism of action	Factor X is an inactive zymogen that is synthesized in the liver, which can be activated by Factor IXa (via the intrinsic pathway) or by Factor VIIa (via the extrinsic pathway). It is composed of a light chain which contains the Gla (glutamic acid) domain and two epidermal growth factor domains, and a heavy chain that contains the catalytic serine protease domain [1]. The conversion of inactive Factor X into the active form Factor Xa requires the cleavage of a 52-residue peptide from the heavy chain [Label] and the release of 52-residue activation peptide that contains the His236, Asp228 and Ser379 catalytic site. This activation step can occur through the extrinsic or intrinsic pathway and is considered to be the first step in the common pathway to fibrin formation [1]. Factor Xa plays a critical initiation step of the coagulation pathway by cleaving and activating prothrombin to thrombin in complex with FVa, Ca2+ and phospholipids. This complex is also known as the prothrombinase complex. Thrombin then acts upon soluble fibrinogen and Factor XIII to generate a cross-linked fibrin clot [Label].
Absorption	Following a single intravenous dose of 25 IU/kg, the mean peak plasma concentration (CV%) was 0.504 (17.2) IU/mL [Label].
Volume of distribution	Following a single intravenous dose of 25 IU/kg, the mean volume of distribution at steady state (CV%) was 56.3 (24.0) mL/kg [Label].
Protein binding	Not Available

Metabolism	Not Available

elimination	
Half life	Following a single intravenous dose of 25 IU/kg, the mean plasma half-life (CV%) was 30.3 (22.8) hr [Label].
Clearance	Following a single intravenous dose of 25 IU/kg, the mean total body clearance was 1.35 (21.7) mL/kg/hr [Label].
Toxicity	Not Available
Affected organisms	Humans and other mammals
Pathways	Not Available
Pharmacogenomic Effects/ADRs	Not Available

INTERACTIONS

Drug Interactions

ALL DRUGS | APPROVED | VET APPROVED | NUTRACEUTICAL | ILLICIT | WITHDRAWN | INVESTIGATIONAL | EXPERIMENTAL

Show 10 entries Search

DRUG	INTERACTION
(R)-warfarin	The therapeutic efficacy of Coagulation factor X human can be decreased when used in combination with (R)-warfarin.
(S)-Warfarin	The therapeutic efficacy of Coagulation factor X human can be decreased when used in combination with (S)-Warfarin.
4-hydroxycoumarin	The therapeutic efficacy of Coagulation factor X human can be decreased when used in combination with 4-hydroxycoumarin.
Abciximab	The therapeutic efficacy of Coagulation factor X human can be decreased when used in combination with Abciximab.
Acenocoumarol	The therapeutic efficacy of Coagulation factor X human can be decreased when used in combination with Acenocoumarol.
Acetylsalicylic acid	The therapeutic efficacy of Coagulation factor X human can be decreased when used in combination with Acetylsalicylic acid.
Alpha-1-proteinase inhibitor	Alpha-1-proteinase inhibitor may increase the thrombogenic activities of Coagulation factor X human.
Alteplase	The therapeutic efficacy of Coagulation factor X human can be decreased when used in combination with Alteplase.
Amediplase	The therapeutic efficacy of Coagulation factor X human can be decreased when used in combination with Amediplase.
Aminocaproic Acid	The risk or severity of adverse effects can be increased when Aminocaproic Acid is combined with Coagulation factor X human.

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Food Interactions	Not Available

REFERENCES

General References

1. Brown DL, Kouides PA: Diagnosis and treatment of inherited factor X deficiency. Haemophilia. 2008 Nov;14(6):1176-82. doi: 10.1111/j.1365-2516.2008.01856.x. [PubMed:19141158]
2. Venkateswarlu D, Perera L, Darden T, Pedersen LG: Structure and dynamics of zymogen human blood coagulation

10.4103/0019-5049.144643. [PubMed:25535411]

External Links PubChem Substance 347911432

ATC Codes
B02BD13 — Coagulation factor x
- B02BD — Blood coagulation factors
- B02B — VITAMIN K AND OTHER HEMOSTATICS
- B02 — ANTIHEMORRHAGICS
- B — BLOOD AND BLOOD FORMING ORGANS

FDA label Download (288 KB)

CLINICAL TRIALS

Clinical Trials

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PHASE	STATUS	PURPOSE	CONDITIONS	COUNT
3	Completed	Prevention	Factor X Deficiency	1
3	Completed	Treatment	Factor X Deficiency	1
3	Terminated	Treatment	Factor X Deficiency	1
Not Available	Recruiting	Not Available	Factor 10 Deficiency	1

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PHARMACOECONOMICS

Manufacturers Not Available

Packagers Not Available

Dosage forms

Show 10 entries Search

FORM	ROUTE	STRENGTH
Powder, for solution	Intravenous	
Kit		100 [iU]/1mL
Kit		
Kit; powder, for solution	Intravenous	

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Prices Not Available

Patents Not Available

PROPERTIES

State Solid

Experimental Properties Not Available

TAXONOMY

Description	Not Available

Super Class	Organic Acids
Class	Carboxylic Acids and Derivatives
Sub Class	Amino Acids, Peptides, and Analogues
Direct Parent	Peptides
Alternative Parents	Not Available
Substituents	Not Available
Molecular Framework	Not Available
External Descriptors	Not Available

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