

Factor Deficient Plasmas

FACTOR VII DEFICIENT PLASMA

Intended Use

CRYOcheck Factor VII Deficient Plasma is recommended for use as a deficient substrate in clot-based factor VII assays using the one-stage prothrombin time (PT).

Summary and Principle

Deficiencies in coagulation factors may have congenital or acquired etiologies and can compromise *in vivo* hemostasis¹. Factor VII (stable factor) is a single-chained glycoprotein with a molecular weight of 50,000 Da and is important for extrinsic coagulation². Plasma samples deficient in coagulation factor VII exhibit a prolonged PT. Factor VII deficiency is commonly diagnosed through the use of a modified PT assay. When a patient sample is mixed with factor VII deficient plasma, the degree of correction of the PT is proportional to the level of factor VII in the patient plasma³.

Reagents

For *in vitro* diagnostic use.

CRYOcheck Factor VII Deficient Plasma consists of normal citrated human plasma, which has been depleted of factor VII by immunoabsorption. The plasma is then buffered with 0.01 M HEPES buffer, aliquoted, and rapidly frozen. Factor VII has been assayed at less than 1% of normal levels by both functional and antigenic methods. Other factors have been assayed and results are provided on the Certificate of Analysis that accompanies each lot number.



ALL BLOOD PRODUCTS SHOULD BE TREATED AS POTENTIALLY INFECTIOUS. SOURCE MATERIAL FROM WHICH THIS PRODUCT WAS DERIVED WAS FOUND NEGATIVE WHEN TESTED IN ACCORDANCE WITH CURRENT FDA REQUIRED TESTS. NO KNOWN TEST METHODS CAN OFFER ASSURANCE THAT PRODUCTS DERIVED FROM HUMAN BLOOD WILL NOT TRANSMIT INFECTIOUS AGENTS. Accordingly, these human blood based products should be handled and discarded as recommended for any potentially infectious human specimen⁴.

Storage and Handling

When stored at -40 to -80°C, CRYOcheck Factor VII Deficient Plasma is stable to the end of the month indicated on the product packaging.

Thaw each vial at 37°C (± 1°C) in a waterbath. **The use of a dry bath or heating block for thawing is not recommended.** Thawing times are important and should be strictly adhered to. The use of a timer is recommended. Refer to the Thawing Table for recommended thawing times based on aliquot size. Allow thawed plasma to acclimate to room temperature (18 to 25°C) and invert gently prior to use.

THAWING TABLE

Aliquot Size	37°C (± 1°C) Waterbath
1.0 mL	4 minutes
1.5 mL	5 minutes

CRYOcheck Factor VII Deficient Plasma may be used for up to 8 hours after thawing, if capped in the original vial and maintained at 2 to 8°C. Allow refrigerated plasma to acclimate to room temperature (18 to 25°C) and invert gently prior to use. **Thawed material should be discarded after 8 hours and should not be refrozen.**

Availability

Product	Catalog #	Format
Factor VII Deficient Plasma	FDP07-10	25 vials x 1.0 mL
	FDP07-15	25 vials x 1.5 mL

Instruments

Each lab should prepare the local instrument in accordance with the manufacturer's instructions for use.

Procedure

After thawing and preparing CRYOcheck Factor VII Deficient Plasma, use in accordance with established laboratory procedures for the quantitative assessment of factor VII.

Materials Provided

- CRYOcheck Factor VII Deficient Plasma

Materials Required but not Provided

- Waterbath capable of maintaining 37°C (± 1°C)
- Assay reagents
- Owren's Veronol Buffer or equivalent
- Coagulation instrument or assay system
- Calibration plasma (e.g. CRYOcheck Normal Reference Plasma)
- Quality control material (e.g. CRYOcheck Reference Control Normal, CRYOcheck Abnormal 1 Reference Control, CRYOcheck Abnormal 2 Reference Control)
- 2 cycle log-log graph paper
- Plastic test tubes (e.g. 12 x 75 mm)
- Sample cups
- Plastic disposable pipettes
- Volumetric pipette
- Timer

Standard Curve Preparation

Methods may vary according to instrumentation used. Consult the instrument manufacturer's instruction manual for recommended factor assay (extrinsic) protocols.

- Prepare assay reagents, calibration plasma, and buffer according to manufacturer's directions.

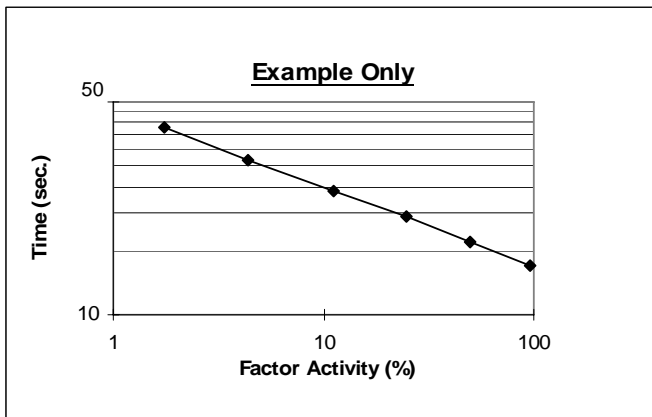


2. Make serial dilutions of calibration plasma from 1:10 to 1:320 in buffer as follows:

Tube No.	Volume of Buffer	Volume of Calibration Plasma	Dilution	% Factor
1	1.8 mL	0.2 mL calibration plasma	1:10	100%
2	1.0 mL	1.0 mL of Tube No. 1	1:20	50%
3	1.0 mL	1.0 mL of Tube No. 2	1:40	25%
4	1.0 mL	1.0 mL of Tube No. 3	1:80	12.5%
5	1.0 mL	1.0 mL of Tube No. 4	1:160	6.25%
6	1.0 mL	1.0 mL of Tube No. 5	1:320	3.12%

Note: This is an **example only** of a serial dilution profile prepared using calibration plasma with a factor VII level of 100%. Always be sure to utilize the lot-specific factor VII level of the calibration plasma in use. If using CRYOcheck Normal Reference Plasma, refer to the lot-specific Assay Certificate.

3. Prewarm thromboplastin to 37°C (± 1°C).
4. To a coagulation reaction cuvette, add 0.1 mL of CRYOcheck Factor VII Deficient Plasma and 0.1 mL of Tube No. 1 (100% of factor). Mix and incubate according to manufacturer's directions.
5. Add 0.2 mL of prewarmed thromboplastin and simultaneously initiate the clot timer. Record clotting time in seconds.
6. Repeat steps 4 and 5 for Tube No.'s 2 to 6.
7. On log-log graph paper plot clotting times in seconds (y-axis) vs. % of factor VII activity (x-axis).
8. Construct the standard curve by drawing the best straight line fit through the plots.



Specimen Collection and Preparation

Patient samples should be collected into 105-109 mmol/L sodium citrate dihydrate anticoagulant (3.2%) in a ratio of 9 parts blood to 1 part anticoagulant. Patient plasma is derived by centrifugation at 1500 x g for 15 minutes and should be tested within 4 hours of collection when maintained at 2 to 4°C in accordance with NCCLS guidelines⁵.

Assay Procedure

1. Prepare a 1:10 dilution of patient plasma with buffer.
2. Repeat steps 3 through 5 of Standard Curve Preparation, substituting diluted patient plasma for diluted calibration plasma.
3. Read the percent factor VII activity from the standard curve by finding the point where the clotting time intercepts the curve, then reading the percent factor VII activity off the x-axis.

4. Further dilutions of patient plasma may be prepared and tested to confirm the value.

Quality Control

Each laboratory should establish its own quality control (QC) ranges using acceptable statistical methods. These quality control ranges may then be used to monitor and validate the integrity of the test system⁶. For all coagulation tests, the laboratory must include at least two levels of control for every eight hours of operation and any time a change in reagents occurs⁷.

Results

Factor VII activity values recovered below the normal range may be indicative of a factor VII deficiency (congenital or acquired). Each laboratory should establish its own normal range for factor VII activity in accordance with NCCLS guidelines⁸.

Limitations of the Procedure

When proper control values are not obtained, assessment of each component of the test system including reagents, control plasmas, instrumentation and operator technique must be undertaken in order to ascertain that all other components are functioning properly⁹.

Expected Values

Expected values may vary according to reagent, instrument and technique employed. It is recommended each laboratory establish its own normal range for factor VII activity.

Performance Characteristics

Refer to the Certificate of Analysis for clotting factor specifications with each lot number of CRYOcheck Factor VII Deficient Plasma. When used according to recommended methods, results are subject to the limitations of the assay system (i.e. reagents, instrument) in use.

Bibliography

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