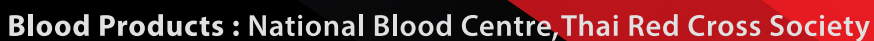




BLOOD PRODUCTS



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Introduction

National Blood Centre (NBC), Thai Red Cross Society (TRCS), has developed blood transfusion services and produced blood products which are of high quality with international standard to meet an adequate and safest blood supply for the treatment of patients for the whole country. At present, blood is still considered as one of the standard treatments for the patients with hematologic diseases and trauma ones from accidents, operations and other causes. A unit of donated blood can be prepared for 3 types of blood components; red blood cells, platelets and plasma, for replacement therapy for patients those in need.

Apart from a service of “blood and blood component”, NBC strongly aims to develop “Plasma - Derived Medicinal Products” for the treatment of patients with complicated diseases. In addition, NBC has produced various types of “Antiserum and Standard Cells” of high quality with international standard and appropriate price. NBC has a goal to enable Thailand to be self-sufficient, reduce the import from abroad and promote the sustainable development of laboratories of blood banks as well.

We do hope that hospitals will consider to use the above NBC blood products effectively and appropriately for patient treatment. All blood products and antisera including standard cells are available at NBC and 12 Regional Blood Centres all over the country.

บทนำ

ศูนย์บริการโลหิตแห่งชาติ สภากาชาดไทย ได้พัฒนางานบริการโลหิตและผลิตผลิตภัณฑ์โลหิตที่มีคุณภาพตามมาตรฐานสากล เพื่อให้มีปริมาณเพียงพอและความปลอดภัยสูงสุด สำหรับใช้ในการรักษาพยาบาลแก่ผู้ป่วยทั่วประเทศ ทั้งนี้ การรักษาด้วยการให้โลหิตและส่วนประกอบโลหิต เป็นมาตรฐานในการรักษาผู้ป่วยโรคทางโลหิตวิทยา และผู้ป่วยที่เสียเลือดจากอุบัติเหตุ จากการผ่าตัด และจากสาเหตุอื่นๆ โดยโลหิตที่ได้รับจากการบริจาคหนึ่งถุงสามารถเตรียมเป็นส่วนประกอบโลหิตได้ 3 ชนิด ได้แก่ เบ็ดเลือดแดง เกล็ดเลือด และพลาสมา เพื่อนำไปใช้ทดแทนในส่วนที่ผู้ป่วยจำเป็นต้องได้รับ

นอกจากการให้บริการ “โลหิตและส่วนประกอบโลหิต” แล้ว ศูนย์บริการโลหิตแห่งชาติ ยังมุ่งมั่นในการพัฒนา “ผลิตภัณฑ์ยาจากพลาสมา” เพื่อใช้ในการรักษาผู้ป่วยโรคซับซ้อน รวมถึงมีการผลิต “น้ำยาแอนติซีรัมและผลิตภัณฑ์เซลล์” ชนิดต่างๆ ที่มีคุณภาพตามมาตรฐานสากล ในราคาที่เหมาะสม โดยมีเป้าหมายให้ประเทศไทยสามารถพึ่งพาตนเอง ลดการนำเข้าจากต่างประเทศ อีกทั้งส่งเสริมการพัฒนางานห้องปฏิบัติการจรรยาบรรณการเลือดได้อย่างยั่งยืน

ศูนย์บริการโลหิตแห่งชาติ สภากาชาดไทย หวังเป็นอย่างยิ่งว่า โรงพยาบาลและสถานพยาบาลต่างๆ จะพิจารณาเลือกใช้ผลิตภัณฑ์ดังกล่าวข้างต้นได้อย่างมีประสิทธิภาพและเหมาะสมสำหรับผู้ป่วย โดยผลิตภัณฑ์ทั้งหมดมีให้บริการที่ ศูนย์บริการโลหิตแห่งชาติ และภาคบริการโลหิตแห่งชาติ 12 แห่ง ทั่วประเทศ

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Blood Products for Clinical Use

● Red Blood Cells



Packed Red Cells (PRC)

Volume	160-260 mL (unit size 350 mL)
Hematocrit	≤ 80%
Hemoglobin	min 35 g/unit
Hemolysis	< 0.8% at the end of storage
Store at	1 – 6 °C
Shelf life	35 days (CPDA-1)



Leukocyte Poor Packed Red Cells (LPRC)

Volume	200-350 mL
Hematocrit	50-70% in additive solution
Hemoglobin	min 40 g/unit
Leukocyte count	< 1.2×10^9 cells/unit
Hemolysis	< 0.8% at the end of storage
Store at	1 – 6 °C
Shelf life	42 days (SAG-M)



Leukodepleted Packed Red Cells (LDPRC)

Volume	170-330 mL (unit size 450 mL) 180-230 mL (unit size 350 mL)
Hematocrit	50-70% in additive solution ≤ 80% without additive solution (only unit 450 mL)
Hemoglobin	min 40 g/unit (unit size 450 mL) min 32 g/unit (unit size 350 mL)
Residual leukocyte	< 1×10^6 cells/unit
Hemolysis	< 0.8% at the end of storage
Store at	1 – 6 °C
Shelf life	35 days (CPDA-1) 42 days (SAG-M)

● Platelets



Leukodepleted Pool Platelet Concentrates (LDPPC)

Volume	> 200 mL
Platelet	> 240×10^9 /unit
Residual leukocyte	< 1×10^6 cells /unit
pH	> 6.4
Swirling	Swirl
Store at	20 – 24 °C
Shelf life	7 days

● Plasma



Fresh Frozen Plasma (FFP)

Volume	≥ 150 mL
Factor VIII	≥ 0.7 IU/mL
Appearance	No visible clots
Leakage	No leakage
Store at	≤ -20 °C
Shelf life	1 year



Leukodepleted Fresh Frozen Plasma (LDFFP)

Volume	≥ 150 mL
Factor VIII	≥ 0.7 IU/mL
Appearance	No visible clots
Leakage	No leakage
Store at	≤ -20 °C
Shelf life	1 year



Cryoprecipitate

Volume	< 15 mL
Factor VIII	≥ 70 IU/unit
Fibrinogen	≥ 140 mg/unit
Appearance	No visible clots
Leakage	No leakage
Store at	≤ -20 °C
Shelf life	1 year



Cryo-Removed Plasma (CRP)

Volume	≥ 150 mL
Appearance	No visible clots
Leakage	No leakage
Store at	≤ -20 °C
Shelf life	1 year

● Apheresis blood components



Single Donor Red Cells, SDR or Two-Unit Filtered Red Cells

Volume	280 mL
Hematocrit	≥ 60%
Residual Platelet	< 1×10^6 /unit
Residual leukocyte	< 1×10^6 cells/unit
Hemoglobin	≥ 55 g / unit
Hemolysis	< 0.8% at the end of storage
Protein	< 1 g / unit
Store at	1 - 6 °C
Shelf life	42 days (SAG-M)



Single Donor Granulocyte, SDG

Volume	200 - 350 mL
Leukocyte	$1.0 - 2.5 \times 10^{10}$ cells/unit
Store at	20 - 24 °C
Shelf life	Use as soon as possible within 24 hours



Single Donor Fresh Frozen Plasma or Quarantine Plasma

Volume	≥ 500 mL
Residual leukocyte	< 1×10^6 cells/unit
Store at	≤ -20 °C
Shelf life	3 years



Leukodepleted Plateletpheresis PAS-C

Volume	200 - 350 mL
Platelet	$> 2.4 \times 10^{11}$ /unit
Residual Leukocyte	$< 1 \times 10^6$ cells/unit
pH	> 6.4
Store at	20 - 24 °C
Shelf life	7 days



PI Psoralen- treated Plateletpheresis PAS-C

Volume	200 - 350 mL
Platelet	$> 2.4 \times 10^{11}$ /unit
Residual Leukocyte	$< 1 \times 10^6$ cells/unit
pH	> 6.4
Store at	20 - 24 °C
Shelf life	7 days



Leukodepleted Plateletpheresis

Volume	200 - 350 mL
Platelet	$> 2.4 \times 10^{11}$ /unit
Residual Leukocyte	$< 1 \times 10^6$ cells/unit
pH	> 6.4
Store at	20 - 24 °C
Shelf life	7 days



Pediatric Leukodepleted Platelet Concentrates (PLDPC)

Volume	57 - 65 mL
PAS-C	34 - 55 ml
Platelet	$> 60 \times 10^9$ /unit
Residual leukocyte	$< 1 \times 10^6$ cells/unit
pH	> 6.4
Store at	20 - 24 °C
Shelf life	7 days

Reagents for Blood Bank

● Blood Grouping Antisera



Anti-A Murine MoAb

Volume 10 mL
Store at 2 - 8 °C
Shelf life 18 months



Anti-B Murine MoAb

Volume 10 mL
Store at 2 - 8 °C
Shelf life 18 months



Anti-A,B Murine MoAb

Volume 10 mL
Store at 2 - 8 °C
Shelf life 18 months



Anti-A₁ (Murine MoAb)

Volume 10 mL
Store at 2 - 8 °C
Shelf life 18 months



**Anti-D (IgG)
(Human MoAb)**

Volume 10 mL
Store at 2 - 8 °C
Shelf life 18 months



**Anti-D (IgM/IgG)
(Human MoAb)**

Volume 10 mL
Store at 2 - 8 °C
Shelf life 18 months



**Anti-C
(Human MoAb)**

Volume 5 mL
Store at 2 - 8 °C
Shelf life 18 months



**Anti-c
(Human MoAb)**

Volume 5 mL
Store at 2 - 8 °C
Shelf life 18 months



**Anti-E
(Human MoAb)**

Volume 5 mL

Store at 2 - 8 °C

Shelf life 18 months



**Anti-e
(Human MoAb)**

Volume 5 mL

Store at 2 - 8 °C

Shelf life 18 months



**Anti-M
(Murine MoAb)**

Volume 10 mL

Store at 2 - 8 °C

Shelf life 18 months



**Anti-N
(Murine MoAb)**

Volume 10 mL

Store at 2 - 8 °C

Shelf life 18 months



**Anti-Mi^a
(Human MoAb) (IgM)**

Volume 5 mL
Store at 2 - 8 °C
Shelf life 18 months



**Anti-H
(Murine MoAb)**

Volume 10 mL
Store at 2 - 8 °C
Shelf life 18 months



**Anti-P1
(Human MoAb) (IgM)**

Volume 5 mL
Store at 2 - 8 °C
Shelf Life 18 months



**Anti-Di^a
(Human MoAb)**
Volume 5 mL
Store at 2 - 8 °C
Shelf life 18 months



**Anti-Human Globulin
(anti-IgG/anti-C₃d)
(Rabbit and Murine MoAb)**
Volume 10 mL
Store at 2 - 8 °C
Shelf life 18 months



**AHG Anti-IgG (Monospecific)
Polyclonal antibody (Rabbit)**
Volume 10 mL
Store at 2 - 8 °C
Shelf life 18 months

• Standard Cells



3% A cells, B cells (ABO reverse grouping)

Volume 10 mL
Store at 2 - 8 °C
Shelf life 1 month



3% O₁ cells, O₂ cells, O₃ cells (Antibody Screening)

Volume 10 mL
Store at 2 - 8 °C
Shelf life 1 month



3% O cells Mi(a+), Di(a+) (Antibody Screening)

Volume 10 mL
Store at 2 - 8 °C
Shelf life 1 month



3% Panel cells (O₁-O₁₁) (Antibody Identification)

Volume 10 mL
Store at 2 - 8 °C
Shelf life 1 month



3% Coombs Control Cells (For Antiglobulin test)

Volume 10 mL
Store at 2 - 8 °C
Shelf life 1 month



3% Rh negative cells (Control Cells for Rh typing)

Volume 10 mL
Store at 2 - 8 °C
Shelf life 1 month



3% Papainized Screening Cells (O₁, O₂, O₃) (Antibody Screening)

Volume 10 mL
Store at 2 - 8 °C
Shelf life 1 month



3% Papainized Panel Cells (O₁-O₁₁) (Antibody Identification)

Volume 10 mL
Store at 2 - 8 °C
Shelf life 1 month

- Other reagents



LISS
(Low-Ionic Strength Salt Solution)

Volume 10 mL
Store at 2 - 8 °C
Shelf life 18 months



Alsever's solution
(For Red Blood Cells Suspension)

Volume 400 mL
Store at 2 - 8 °C
Shelf life 18 months

Blood Bag



CPD Single Blood Bag

Bag volume 200 mL
Package size 1 unit / pack
Store at 15 - 30 °C
Shelf life 1 year



Single Empty Bag

Bag volume 500 mL
Package size 1 unit / pack
Store at 15 - 30 °C
Shelf life 2 years



CPD/SAG-M Quadruple Blood Bag with Whole Blood Filter

Bag volume 350 mL
Package size 1 unit / pack
Store at 15 - 30 °C
Shelf life 1 year



CPD/SAG-M Quadruple Blood Bag with Whole Blood Filter

Bag volume 450 mL
Package size 1 unit / pack
Store at 15 - 30 °C
Shelf life 1 year



CPD/SAG-M Quadruple Blood Bag

Bag volume 500 mL
 Package size 2 unit / pack
 Store at 15 - 30 °C
 Shelf life 1 year



Triple Empty Bag

Bag volume 500 mL
 Package size 1 unit / pack
 Store at 15 - 30 °C
 Shelf life 2 years



Sodium Citrate 4% w/v Solution

Volume 500 mL
 Package size 1 unit / pack
 Store at 15 - 30 °C
 Shelf life 2 years

Copper Sulphate Solution For Hemoglobin Test



Copper Sulphate Solution

Specific gravity	1.052
Volume	450 mL
Store at	15 - 28 °C
Shelf life	2 years



Copper Sulphate Solution

Specific gravity	1.053
Volume	450 mL
Store at	15 - 28 °C
Shelf life	2 years

Plasma Derived Medicinal Products (PDMPs)

● National Blood Centre



Heat Treated Freeze Dried Cryoprecipitate (HTFDC)

Factor VIII ≥ 200 IU/bottle, Fibrinogen > 420 mg/bottle

Volume 50 mL (after reconstitution)

Store at $2 - 8^{\circ}\text{C}$

Do not freeze ; protect from light

Shelf life 1 year



Hepatitis B Immunoglobulin for IM

Potency 200 IU/mL 16 g%

Size 2 mL

Store at $2-8^{\circ}\text{C}$

Do not freeze ; protect from light

Shelf life 3 years



Human Rabies Immunoglobulin for IM

Potency 150 IU/mL 16 g%

Size 5 mL

Store at $2-8^{\circ}\text{C}$

Do not freeze ; protect from light

Shelf life 2 years

● Plasma Fractionation Centre



FACTOR VIII TRCS

FVIII 250 and 500 IU/vial

Volume 10 and 20 mL (after reconstitution)

Store at 2-8 °C

Do not freeze ; protect from light

Shelf life 2 years



IMMUNOGLOBULIN 5 TRCS

Human Immunoglobulin 2.5 g and 5 g Solution

Intravenous Administration

Size 50 and 100 mL

Store at 2-8 °C

Do not freeze ; protect from light

Shelf life 3 years



ALBUMIN 20 TRCS

Human Albumin 20% Solution

Size 50 and 100 mL

Store below 30 °C

Do not freeze ; protect from light

Shelf life 3 years



Contact Information Centre

National Blood Centre, Thai Red Cross Society

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Blood and Blood Products Distribution Department

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