Indications of fresh frozen plasma

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BLOOD PRODUCTS

Whole blood has many disadvantages → most countries have stopped giving it!

It must be decided what kind of blood components is necessary to the patient.

Blood component therapy allows a single unit of donated blood to benefit more than one patient.

Red blood cells and platelets are the most frequently transfused blood components.

Standard blood donation:

a 450 ml unit of whole blood is collected in a plastic bag that contains an anticoagulant preservative.

Triple or quadruple blood bags are used.

(one primary bag ★ having anticoagulant CPD-A solution /citrate-phosphate-dextrose-adenine/ and three empty satellite bags).

After collection, blood has to be centrifugated:

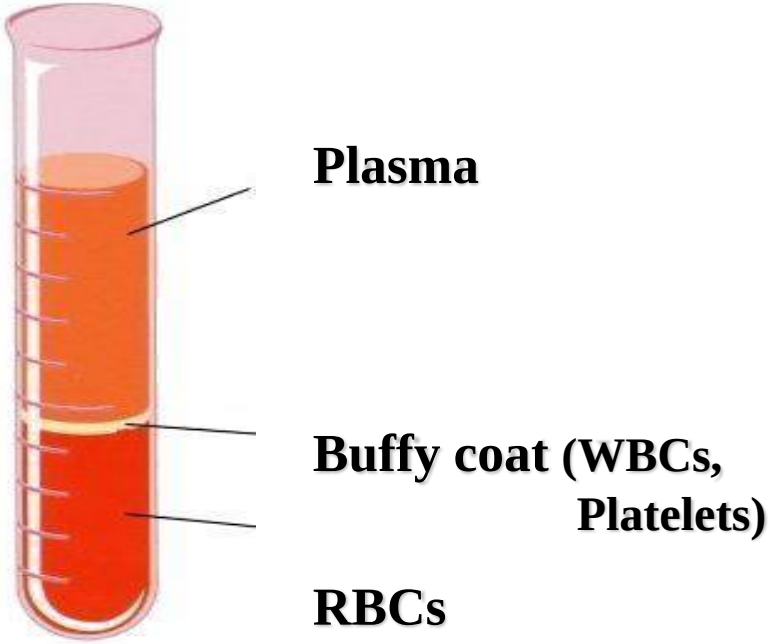
Centrifuge force makes

plasma,

leukocytes, and platelets *(„buffy coat")*

red cells

from different layers into the blood bag, according to their different densities.



Separation of components

is happen in a closed system, using a set of plastic containers, which have been integrally connected to each other.

Microbial contamination is avoided by the closed system.

Separation procedure: **plasma is expressed into an attached empty container from the primary bag in which RBCs and buffy coat are left. Buffy coat can used for platelet preparation.**

Manual method

Automated method

Result: **from 1 Unit (U) whole blood:**

Give blood and save 3 life!

1U RBCs **1U plasma** **1U platelets**

Separation of blood components permits their storage under optimal conditions (at different temperatures):

- **RBCs:** at +4ºC
- **Platelets:** at room temperature with continuous agitation
- **Plasma:** in frozen state

Platelet agitator equipment

Blood components

- **I. Labile blood components:** (Blood Banks)

are prepared as single units from one donor.

  - **have limited shelf life (red blood cells: 35 days at +4 °C, platelets: 5 days at room temperature, fresh frozen plasma: at – 25 °C 2 years)**
  - ***have not been submitted to a viral inactivation step!***

- **II. Stable blood components:** (Pharmacy)

are medicinal products prepared from pooled human plasma
(blood coagulation factor concentrates, albumin, immunoglobulins)

  - **shelf life longer than a year**
  - ***all products are virus inactivated!***

Blood products

I. Labile:

- (Whole blood)
- Red blood cells (RBCs)
- Leukoreduced RBCs
- Washed RBCs
- Platelet concentrates
- Granulocytes
- Fresh frozen plasma (FFP)

II. Stable:

- Coagulation factor concentrates
- Albumin
- Immunglobulin preparations (polyvalent /IVIG/, hyperimmune)
- Other proteins

Fresh Frozen Plasma

Plasma (FFP) is a component for transfusion or for fractionation (source material of stabile blood products i.e Ig-s, albumin)), prepared either from whole blood or from plasmapheresis, frozen within 24 hours (max.) on core temperature (-30) °C. It is resultedF*VIII*≥*70 %*

Volume, ~ 200 ml, PLT < 50 x 10^9 /l,
WBC < 0,1 x 10^9/ l,
Leucocyte depleted WBC < 1 x 10^6/ l
RBC < 6,0 x 10^9/ l,

Expiry:Storage temperature < (-25) °C 24months in Hungary.

* Recommandation NoR (95) 15 on the preparation, use and quality assurance of blood components, Strassbourg,2017.

Fresh frozen plasma (FFP)

- Contain: normal plasma levels of stable clotting factors, albumin, immunoglobulin and Factor VIII at a level of at least 70% of normal fresh plasma
- Volume, ~ 200 ml
- Store: at –25°C or colder
- Expiry: 2 years

Indication of FFP

Preparation: the plasma is removed from a unit of whole blood and frozen below - 25°C within 6-24 hours of collection.

It is an unconcentrated source of all clotting factors without platelets.

Indications:

- multiple clotting factor deficiencies with bleeding
- severe liver disease
- urgent warfarin reversal
- massively bleeding patients along with RBCs to prevent dilution of clotting proteins
- TTP and HUS by plasma exchange

Should not be used for volumen expansion or nutritional support.

FFP *must be ABO compatible* with the recipients red cells.

Plasma freezer in our centrum - NHBS Szeged

- plasma freezer with monitoring and alarm system
- at –25°C or colder
- expiry: 2 years

Contraindications

- Clotting factor deficiency, if the stable factor product or recombinant factor product is available
  - i.e: Willebrand disease- HemateP
  - Hemofilia A- Refacto, Nuwiq, Humafactor8,
  - Hemofilia B – Humafactor 9


Thank you for your attention!
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