Manufacturing blood products from whole blood

Two methods are used to make blood products for transfusion:

**Buffy coat method (B1)**

- **Whole blood** is collected from donors and cooled to 18-24°C with anticoagulant.

**Spin**

  - Centrifugation separates whole blood into three layers (Fig. 4):
    - Top layer: **Plasma**
    - Middle layer: **Buffy coat** (white cells and platelets)
    - Bottom layer: **Red blood cells**

**Press**

  - A press is used to extract three layers to make one final product and two intermediate products (Fig. 2)
    - **Buffy coat**
      - Stored frozen
      - Used for fractionation or pooled platelets
    - **Plasma Unit**
      - Stored frozen
      - Used for transfusion
    - **Red blood cells**

**Sort & Pool**

  - Four **buffy coats** are sorted and pooled with one from a male donor (Fig. 1)

**Spin**

  - Centrifugation is used to remove red blood cells

**Filter**

  - Filtration is used to remove white blood cells (leukoreduction)

**Pooled Platelets Unit**

  - Stored at room temperature with gentle agitation
  - Used for transfusion

**Red Blood Cell Unit**

  - Nutrients and preservatives added
  - Stored at 6°C
  - Used for transfusion

**Whole blood method (B2)**

- **Whole blood** is collected from donors and cooled to 1–6°C with anticoagulant.

**Filter**

  - Filtration is used to remove white blood cells (leukoreduction) and platelets (Fig. 3)

**Spin**

  - Centrifugation is used to separate the filtered blood into two layers (Fig. 4):
    - Top layer: **Plasma**
    - Bottom layer: **Red blood cells**

**Press**

  - A press extracts two layers to make the final two products (Fig. 2)
    - **Plasma Unit**
      - Stored frozen
      - Used for transfusion or processed for cryoprecipitate and cryosupernatant
    - **Red Blood Cell Unit**
      - Nutrients and preservatives added
      - Stored at 6°C
      - Used for transfusion

---

*Figure 1. Pool*

*Figure 2. Press*

*Figure 3. Filter*

*Figure 4. Spin*