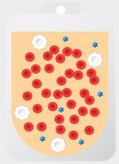
Manufacturing blood products from whole blood

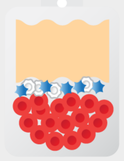
Two methods are used to make blood products for transfusion

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)

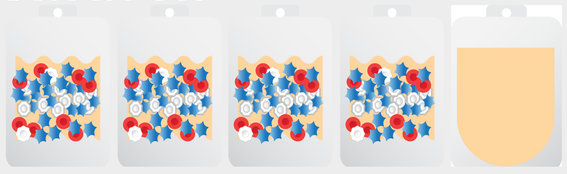
Buffy coat

Plasma Unit

- Stored frozen
- Used for fractionation or pooled platelets

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

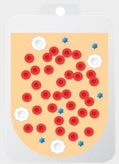
Filter Filtration is used to remove white blood cells (leukoreduction) (Fig. 3)

Red Blood Cell Unit

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

Figure 1. Pool

Whole blood method (B2)

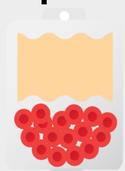


Whole blood is collected from donors and cooled to 1–6°C with anticoagulant

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 2. Press

Figure 3. Filter

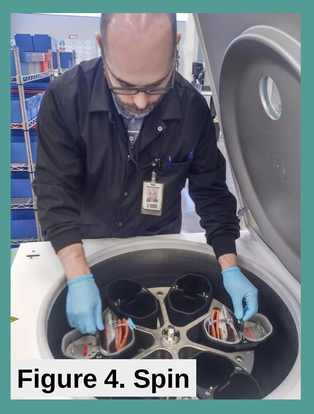


Figure 4. Spin

Canadian Blood Services
BLOOD PLASMA STEM CELLS ORGANS & TISSUES