DRAFT MONOGRAPHS FOR COMMENTS

This contains draft new monograph for inclusion in the Indian Pharmacopoeia (IP). The content of this draft document is not final, and the text may be subject to further revisions prior to publication in the IP. This draft does not necessarily represent the decisions or the stated policy of the IP or Indian Pharmacopoeia Commission (IPC).

Manufacturers, regulatory authorities, health authorities, researchers, and other stakeholders are invited to provide their feedback and comments on this draft proposal. Comments received after the last date will not be considered by the IPC before finalizing the monograph.

Please send any comments you may have on this draft document to lab.ipc@gov.in **before the last date for comments.**

Document History and Schedule for the Adoption Process

Description	**Details**
Document version	1.0
First Draft published on IPC website for public comments	4th November2024
Last Date for Comments	19th December 2024
Monograph proposed for Inclusion in	IP 2026
Tentative effective date of monograph	January, 2026
Draft published on IPC website for public comments	NA
Further follow-up action as required.	

Plasma

Plasma, is liquid part of blood used for transfusion or fractionation, it is separated either from whole blood or directly collected by apheresis method. Based on the method of collection plasma is categorized into the following two types;

1. Recovered Plasma (Separated from whole blood)
2. Source Plasma (From Apheresis)

The plasma must be frozen in the given time frame and it must contain, on average, 70 per cent or more of the value of the freshly collected plasma unit and at least similar quantities of the other labile coagulation factors and naturally occurring inhibitors.
It must not contain irregular antibodies of clinical significance and, if leucocyte-depleted, the component must contain less than 5×10^6 leucocytes.

Preparation

From Whole Blood

Plasma is separated from whole blood unit which has been collected using a blood bag with integral transfer packs subjecting to centrifugation and separated preferably within 6 hours of blood collection.

1. If platelets need to be separated from the whole blood, then it should undergo soft spin first and then hard spin for the plasma
2. If platelets are not required to be separated then plasma can undergo hard spin directly

Plasma prepared by any of the above-mentioned method must undergo freezing. Freezing must take place in a suitable storage cabinet that allows complete freezing within one hour to a temperature below – 20°.
The quality of plasma from the point of view of preservation of Coagulation/labile proteins depends on how plasma is frozen and how it is stored. Based on how the plasma is separated, frozen and stored can be classified into the following categories;

1. Fresh Frozen Plasma (FFP)
2. Cryoprecipitate
3. Cryo-Depleted /Cryo-Poor Plasma (CPP)

Fresh Frozen Plasma (FFP) by recovered method

For preparation of FFP, the plasma must be separated from blood within 6 hours. The FFP is prepared by freezing plasma below 40° within 1 hour of preparation and this method of freezing is called as Blast/Rapid/Snap, as in this method plasma undergoes rapid freezing and that is how most of the labile proteins are preserved. Once frozen, this plasma can be stored at -20° for 1 year from the date of preparation.

Quality Control Parameters

Parameter	Specification	Frequency of test
Volume	800 ± 200ml (from apheresis) 200 ml ± 50 ml (from Whole Blood) 180 ±20 ml from 350 ml bag 200±20 ml from 450 ml bag	4 units per month/ 1 per cent of all units (whichever is more)
Total Protein	>0.70 IU/ml	1 per cent of all units or 4 units/month (whichever is more)
Factor VIII	$\geq$0.70 IU/ml	1 per cent of all units or 4 units/month(whichever is more)
Fibrinogen	200 - 400 mg	4 units per month
Residual cells	Red cells: < 6.0×10^9/ liter Platelets: < 30×10^9/liter	1 per cent of all units or 4 units/month(whichever is more)
Leucocyte count	<5.0×10^6	1 per cent of all units or 4 units/month(whichever is more)
Leakage	No leakage in any part of container	Visual inspection of all Units after pressure in a plasma extractor before freezing
Visual changes	No abnormal colour or visible clots	Visual inspection of all Units

General requirements shall be referred regarding labeling, storage, and transportation requirements.

Cryoprecipitate

Cryoprecipitate is a component obtained by further processing of FFP and then concentrated. It contains a major portion of the Factor VIII, von Willebrand factor, fibrinogen, Factor XIII and fibronectin present in freshly drawn and separated plasma.

Preparation

Any FFP unit within the stipulated storage period of at least 48 hours and desired storage conditions can be used for preparing Cryoprecipitate.

FFP is thawed, either overnight between + 2° to + 6° or by the rapid thaw-siphon thaw technique. After thawing, the component is re-centrifuged using a hard spin at the same temperature. The supernatant cryoprecipitate-poor plasma is then partially removed. The sedimented cryoprecipitate is then rapidly frozen. When cryoprecipitate is prepared from whole blood-derived plasma, the maximal final volume of the component is 40 ml

Alternatively, FFP obtained by apheresis may be used as the starting material and the final component can be prepared using the same freezing/thawing/re-freezing technique.

Quality Control Parameters

Parameter	Specification	Frequency of test
Volume	15 – 20 ml	1 per cent of all units
Total Protein	>0.70 IU/ml	1 per cent of all units or4 units/month (whichever is more)
Factor VIII	at least 80 iu/bag	1 per cent of all units or 4 units/month (whichever is more)
Fibrinogen	at least 150 mg/bag	1 per cent of all units
Residual cells	Red cells: $< 6.0 \times 10^9$ per liter Platelets: $< 30 \times 10^9$ per liter	1 per cent of all units or4 units/month (whichever is more)
Leucocyte count	$< 5.0 \times 10^6$	1 per cent of all units or4 units/month (whichever is more)
Leakage	No leakage in any part of container	Visual inspection of all Units after pressure in a plasma extractor before freezing
Visual changes	No abnormal colour or visible clots	Visual inspection of all Units

General requirements shall be referred regarding labeling, storage, and transportation requirements.

Cryo-depleted /Cryo-poor Plasma (CPP)

Plasma, cryo-depleted is a component prepared from FFP by the removal of the cryoprecipitate. Its content of albumin, immuno-globulins and coagulation factors is the same as that of FFP, except that the levels of the labile Factors V and VIII are markedly reduced. The fibrinogen concentration is also reduced in comparison to FFP.

Preparation

Plasma, cryo-depleted is the by-product of the preparation of Cryoprecipitate from FFP.

Plasma, cryo-depleted should be frozen to a core temperature of –25° or below within six hours of separation from its cryoprecipitate.

Quality Control Parameters

Parameter	Specification	Frequency of test
Volume	150 ml $\pm$ 50 ml (from FFP)	All Units
Total Protein	>0.70 IU/ml	1 per cent of all units or 4 units/month (whichever is more)
Residual cells	Red cells: $< 6.0 \times 10^9$/ liter Platelets: $< 30 \times 10^9$/liter	1 per cent of all units or 4 units/month (whichever is more)
Leucocyte count	$<5.0 \times 10^6$	1 per cent of all units or 4 units/month (whichever is more)
Leakage	No leakage in any part of container	Visual inspection of all Units after pressure in a plasma extractor before freezing
Visual changes	No abnormal colour or visible clots	Visual inspection of all Units

General requirements shall be referred regarding labeling, storage and transportation requirements.