Comparison of Frozen Plasma and Solvent-Detergent Plasma Thaw Times: A Single-Centre Validation Study

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Presenter Disclosure

- Presenter: Kim Thomson

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  - Patents: None
  - Other: None

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BACKGROUND

- As of March 27, 2023, solvent detergent plasma (SDP; Octaplasma®) became available from Canadian Blood Services (CBS) for broad use as a pathogen-reduced alternative to frozen plasma (FP) in patient care. (Figure 1)
- Octaplasma® is considered clinically equivalent to FP as a source of plasma proteins and coagulation factors and is favoured over FP as it has a more consistent protein composition, and lower risk of infection and immune-mediated reactions.
- Clinical concern had been raised regarding the stated minimum 30-minute thaw time per unit within the Octaplasma® Product Monograph, which is longer than the thaw time of FP.
- We sought to complete a hospital-based validation comparing FP and Octaplasma® thaw times.

Figure 1: An untreated frozen plasma (left) and a frozen Octaplasma® (right)

DESIGN AND METHODS

- A real-time audit of plasma ordered for clinical care purposes was completed between July to November 2023 within our largest hospital Transfusion Medicine Laboratory.
- Plasma was selected based upon available inventory and included FP (Canadian Blood Services, Ottawa, ON) or Octaplasma® (Octapharma AB, Stockholm, Sweden).
- Units were stored in a -70°C Ultra-Low Freezer (Helmer Scientific, Noblesville, IN; NuAire, Plymouth, MN) and thawed according to standard lab protocol using the DH8 Plasma Thawer (Helmer Scientific, Noblesville, IN) with an 8-unit capacity and a set point of 30-37°C (See Figure 2).
- All units were placed in a protective thin plastic overwrap bag prior to thaw.
- Units were considered thawed once a clear, yellow solution without precipitates was achieved.

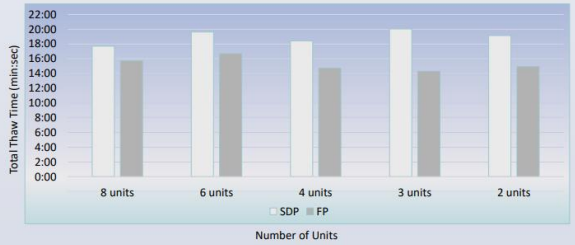
Figure 2: Helmer Ultra-Low Temperature Freezer, i-Series®, iUF126 (right) and Helmer DH8 Plasma Thawer (left).

RESULTS

Table 1: Comparison of FP and SDP (Octaplasma®) thaw conditions and times.

	Frozen Plasma	SDP
Thaw events (n)	55	59
Individual units (n)	228	281
Units per thaw event (mean; range)	4.1; (1-8)	4.7; (2-8)
Temperature per thaw event (mean; range)	36.5°C; (35.6-37.4°C)	36.6°C, (36.0-37.2°C)
Thaw time, all events (mean min:sec; range)	14:59; (12:00-18:03)	18:31; (12:48-23:00)
Thaw time, 1-4 units (mean min:sec; range)	14:39 (12:00-18:00)	15:53 (12:48-22:26)
Thaw time, 5-8 units (mean min:sec; range)	18:42 (14:00-18:03)	18:06 (14:00-23:00)

Figure 3: Comparison of FP and SDP (Octaplasma®) mean event thaw times, with multiple units undergoing thaw during a single event.



- All units passed visual inspection post-thaw and prior to issue or placement into the fridge.

CONCLUSION

- Our validation confirms that the mean SDP thaw time in a hospital environment is 3:32 longer than FP and need not be 30 minutes; this difference is unlikely to be clinically significant in the emergency setting.
- Interestingly, the mean thaw time of 5-8 SDP units was shorter than 1-4 units.
- Utilizing our local methodology, no precipitates were observed upon inspection of the units prior to issue or placement in the fridge.

ACKNOWLEDGEMENTS

- Special thanks to the Saskatoon TML Technologists for their participation in this project.

OPG has received honoraria from Canadian Blood Services and Octapharma (unrelated to this project).
KT, SA and PL have no relevant conflicts of interest to disclose.

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Helmer Ultra-Low Temperature Freezer, i-Series®, iUF126 (left) and Helmer DH8 Plasma Thawer (right).

RESULTS

- Thaw times of 55 events including 228 units of FP and 59 events including 281 units SDP were compared.
- A mean of 4.1 FP units (range 1-8) and 4.7 SDP units (range 2-8) were thawed per event in a plasma thawer.
- The mean FP thaw time of 1-4 units was 14:39 and 5-8 units was 15:53, compared to SDP thaw times of 18:42 and 18:06, respectively.
- All units passed visual inspection post-thaw and prior to issue or placement into the refrigerator.

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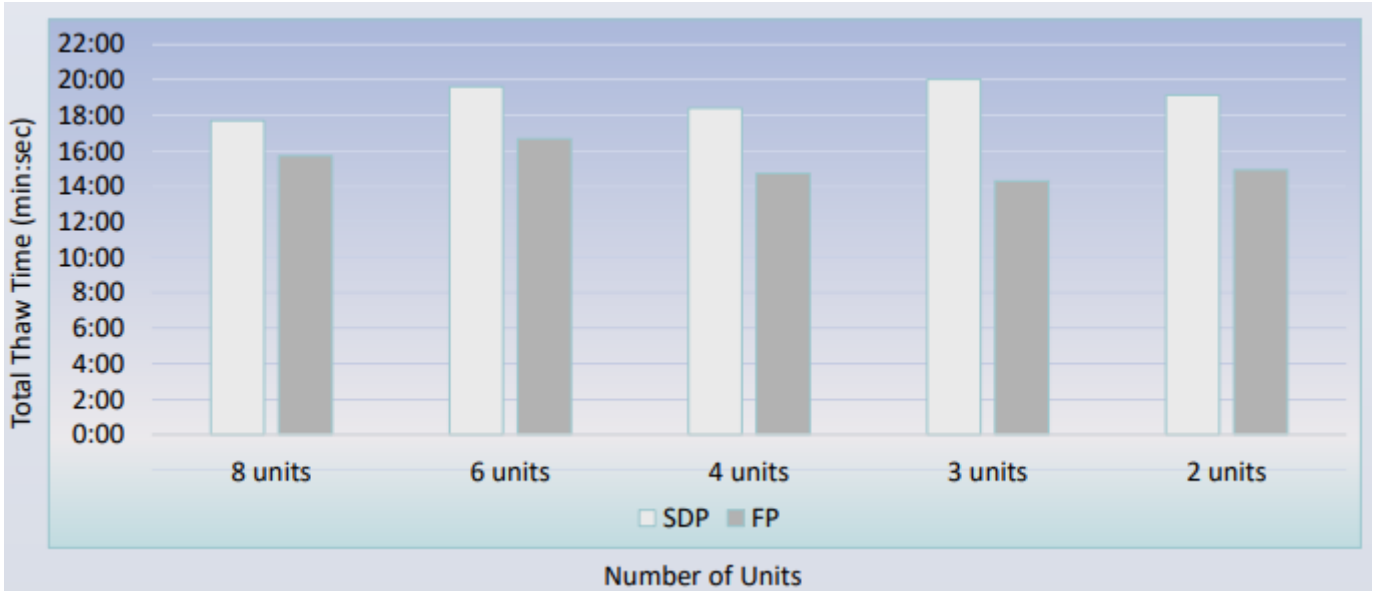
Comparison of FP and SDP Thaw Conditions and Times



Comparison of FP and SDP mean event thaw times, with multiple units undergoing thaw during a single event.

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