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T-ACE II+: Semi-automated in blood components preparation

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Introduction: Previously, blood components preparation in Blood Transfusion Centre, Faculty of Medicine, Khon Kaen University, all procedure handled by the manual. Qualitative were depended on the expertise of staffs. Packed red blood cells (PRC) are produced from a unit of whole blood by centrifugation and removal of most of the plasma, leaving a unit with a hematocrit of about 60 to 70%. Retrospective data for PRC preparation from April to December 2016 was 11,663 units, in 2017 was 12,477 units and January to June 2018 was 6,588 units, respectively. Plasma was separated from packed red cells by plasma extractors, clamp transfer line and seal to separate. All procedures are done by manual. Since 2001, T-ACE II+ was installed with the protocol of quadruple bags for leukocyte-poor red blood cells (LPRC) preparation, the instrument can apply and set parameter for double and triple blood bag. Then T-ACE II+ are available for all blood bags first time at Blood Transfusion Centre, Faculty of Medicine, Khon Kaen University, Thailand in 2017. Therefore, this study aimed to monitor and compare PRC separation between T-ACE II+ and manual.

Study Design and Methods: Survey was conducted in 2017 to 2018 at 1% of PRC, which were separated by T-ACE II+ (A protocol) and hematocrit (Hct.) measured by complete blood count (Matrix 3000). Data collection was excel. The mean and standard distribution results were compared by Z-test with PRC from manual in 2015 (B protocol).

Results: 83 and 263 samples of PRC from protocol A and B preparation were hematocrit and volume measurement. The results found 68.62±5.03 and 73.11±2.91 % hematocrit and 200±19.37 and 221±26 mL. (mean±SD). The average of the A's population is considered to be not equal to the average of the B's population. The difference between the average of the A and B populations is big enough to be statistically significant (p=1.45).

Conclusion: A and B protocol for PRC preparation are statistically significant. Hematocrit percentage and volume of both procedures were accepted by international standard. Therefore, T-ACE II+ completely success instead of manual procedure and benefit to support routine PRC preparation.

Biography

Thipaporn Jaroonsirimaneekul has completed her Master Degree in the year 2001 at the age of 24 years from Faculty of Public Health, Khon Kaen University, Thailand. She is the supervisor of Blood Transfusion Sciences.

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