

## Enumeration of residual white blood cells in leukoreduced blood products: Comparing flow cytometry with a portable microscopic cell counter

Silvia Castegnaro, Patrizia Dragone, Katia Chierogato, Alberta Alghisi, Francesco Rodeghiero, Giuseppe Astori

### Abstract

Transfusion of blood components is potentially associated to the risk of cell-mediated adverse events and current guidelines require a reduction of residual white blood cells (rWBC) below  $1 \times 10^6$  WBC/unit. The reference method to enumerate rare events is the flow cytometry (FCM). The ADAM-rWBC microscopic cell counter has been proposed as an alternative: it measures leukocytes after their staining with propidium iodide. We have tested the Adam-rWBC for the ability to enumerate rWBC in red blood cells and concentrates. We have validated the flow cytometry (FCM) for linearity, precision accuracy and robustness and then the ADAM-rWBC results have been compared with the FCM. Our data confirm the linearity, accuracy, precision and robustness of the FCM. The ADAM-rWBC has revealed an adequate precision and accuracy. Even if the Bland-Altman analysis of the paired data has indicated that the two systems are comparable, it should be noted that the rWBC values obtained by the ADAM-rWBC were significantly higher compared to FCM. In conclusion, the Adam-rWBC cell counter could represent an alternative where FCM technology expertise is not available, even if the risk that borderline products could be misclassified exists.