

Thesis Title	Drop Volume Estimation of Intravenous Set using Gravimetric Method
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Abstract

Intravenous Administration Set (IV Set) is one of medical devices that have been widely used in hospitals. Also, the IV set has to meet the measurement standard to satisfy and guarantee the quality of the set. The error should not exceed $\pm 10\%$ for each IV Set type which is acceptable criteria according to ISO 8536-4. In this research, the drop volume estimation of gravimetric method for IV Set was presented. The gravimetric method was applied from the standard of IEC 60601-2-24. Then, the primary standard calibration system appeared in this paper was set according to the IEC 60601-2-24. The mass and number of drop of distilled water flowing through different IV sets were measured and estimated the drop volume by using 1 mg resolution weighing balance (RS-232), photoelectric sensors and data acquisition system. The results of the calibration system were verified by Tate's Law. In the experiment, oil film was applied for protecting evaporation of the distilled water in the container on the balance. And controlled conditions are constant pressure by the maintained level of water in the supply container during the experiment period. The results for testing the IV Set, the value of drop volume of Tate's Law calculation and the gravimetric method should be approximately equal. The results of IV Set between gravimetric method and Tate's Law calculation did not exceed $\pm 1.6\%$ error value which was acceptable. The uncertainty of measurement was 0.3% of reading.

Keywords: Intravenous Set/ Drop volume/ gravimetric method