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## A comparison of V- tube with BD vacutainer tubes for laboratory tests

**Author Block:** E. Won<sup>1</sup>, M. Jang<sup>1</sup>, M. Shin<sup>1</sup>, D. Cho<sup>1</sup>, S. Kee<sup>1</sup>, S. Kim<sup>1</sup>, J. Shin<sup>1</sup>, Y. Won<sup>2</sup>, D. Ryang<sup>1</sup>, S. Suh<sup>1</sup>.

<sup>1</sup>Chonnam National University Hospital, Hwasun-gun, Jeollanam-do, Korea, Republic of, <sup>2</sup>School of Electronics and Computer Engineering, College of Engineering, Chonnam National University, Gwangju, Korea, Republic of,

### Abstract:

**Background:** Vacuum tubes are widely used in the clinical laboratory for routine tests. We compared a newly developed V tube (AB Medical, Gwangju, Korea) and BD tube (BD, Franklin Lakes, NJ, USA) in common clinical assay of hematology, chemistry and immunoassay tests.

**Methods:** A total of 100 volunteers comprising 79 patients and 21 healthy volunteer were recruited and peripheral blood samples were collected with two brands of EDTA tubes, sodium citrate tubes and serum separating tubes. The samples from EDTA tubes were evaluated for 16 routine hematology tests. The sodium citrate tubes were evaluated for 2 coagulation tests. The SST samples were evaluated for 32 routine chemistry items and three thyroid hormone tests. Their results were statistically analyzed by paired t-test and Bland-Altman plot. Additionally, the stability of each analyte in two brands of vacutainers was evaluated: the results of hematology tests at t=0 hr were compared with those at t=72±2 hr, and the results of chemistry and thyroid hormone test at t=0 hr were compared with those at t=72±2 hr, and t=168 ±2 hr for each tube.

**Results:** Paired t-test analysis revealed that the results of 16 routine hematology tests, 2 coagulation tests, 32 routine chemistry items and three thyroid hormone tests showed clinically allowable differences between two brands of vacuum tubes (t=0 hr). The results of V tube showed significant correlation between the results of BD tube, statistically. Stability of two vacuum tubes for each analyte was similar. Except for 10 items (WBC, MCV, basophil%, MCHC, monocyte%, phospholipid, Na, K, Cl and free T4), almost showed statistically significant but clinically allowable differences according to the storage duration.

**Conclusions:** Newly developed V tube vacutainers provided a suitable alternative to BD tubes in common clinical laboratory.

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