

Evaluation of the Improve Vacuum Blood Collection Tube for Laboratory Tests

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Abstract : Laboratory tests is a significant part for the diagnosis, prognosis, treatment of diseases. Blood collection is a simple process, but can be a potential cause of pre-analytical errors. Vacuum blood collection tubes used to collect and store the blood specimens is necessary for accurate test results. The purpose of this study was to validate Improve serum separator tube(SST) (Guangzhou Improve Medical Instruments Co., Ltd, China) for routine clinical chemistry laboratory testing. Blood specimens were collected from 100 volunteers in three different serum vacuum tubes (Greiner SST , Becton Dickinson SST , Improve SST). The specimens were evaluated for 16 routine chemistry tests using TBA-200FR NEO (Toshiba Medical Co. JAPAN). The results were statistically analyzed by paired t-test and Bland-Altman plot. For stability test, the initial results for each tube were compared with results of 72 hours preserved specimens. Their clinical availability was evaluated by biological Variation of Ricos data bank. Paired t-test analysis revealed that AST, ALT, K, Cl showed statistically same results but calcium (CA), phosphorus(PHOS), glucose(GLU), BUN, uric acid(UA), cholesterol(CHOL), total protein(TP), albumin(ALB), total bilirubin(TB), ALP, creatinine(CRE), sodium(NA) were different($P < 0.05$) between Improve SST and Greiner SST. Also, CA, PHOS, TP, TB, AST, ALT, NA, K, Cl showed statistically the same results but GLU, BUN, UA, CHOL, ALB, ALP, CRE were different between Improve SST and Becton Dickinson SST. All statistically different cases were clinically acceptable by biological Variation of Ricos data bank. Improve SST tubes showed satisfactory results compared with Greiner SST and Becton Dickinson SST. We concluded that the tubes are acceptable for routine clinical chemistry laboratory testing.

Keywords : blood collection, Guangzhou Improve, SST, vacuum tube

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