Our study has shown no significant difference between P-Ionized Calcium (pH adjusted = 7.4) values for the first and second tubes. Hence, the use of a discard tube is not required” Novakovic et al (2018).

Abstract:

BACKGROUND: Deviation in blood collection procedures is a central source of preanalytical variation affecting overall analytical and diagnostic precision. The procedure of venous blood collection for ionized calcium is hypothesized to affect analytical results. Here, we evaluate the effect of blood collection with and without a discard tube, and storage duration on results of P-Ionized Calcium (pH adjusted = 7.4).

METHODS: We collected 100 paired venous blood tubes from randomly selected outpatients using a winged blood collection. No discard tube was drawn before the first tube. The samples were divided in five subsamples, stored at 4°C-6°C at 24 (n = 20), 48 (n = 20), 72 (n = 20), 96 (n = 20) and 120 h (n = 20) after venipuncture, and analyzed for P-Ionized Calcium (pH adjusted = 7.4) on Konelab 60i (Thermo Scientific, Finland). Differences between first and second tubes were evaluated for all samples (n = 100) and for subsamples divided by storage duration, using Bland-Altman plot and Wilcoxon’s rank-sum test.

RESULTS: P-Ionized Calcium (pH adjusted = 7.4) results ranged from 1.13 to 1.37 mmol/L. We observed no statistical significant differences between the first and the second tube when comparing all samples. Dividing samples by storage duration, a statistically significant difference was found (p = .0068) after 120 h, but the difference of individual samples was not clinically relevant.

CONCLUSIONS: Our study has shown no significant difference between P-Ionized Calcium (pH adjusted = 7.4) values for the first and second tubes. Hence, the use of a discard tube is not required. A statistically significant difference was found on samples stored 120 h but was not considered clinically relevant.

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Reference:


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