



This exploratory study was designed to determine if differences in phlebotomy techniques would significantly affect the abundance of plasma proteins in an upcoming biomarker development study” Penn et al (2015).

Abstract:

Multiple reaction monitoring mass spectrometry (MRM-MS) is an emerging technology for blood biomarker verification and validation; however, the results may be influenced by pre-analytical factors. This exploratory study was designed to determine if differences in phlebotomy techniques would significantly affect the abundance of plasma proteins in an upcoming biomarker development study.

ReTweet if useful... Do variations in phlebotomy technique influence blood test results <http://ctt.ec/7lc5J+> @ivteam #ivteam

Click To Tweet

Blood was drawn from 10 healthy participants using four techniques: (1) a 20-gauge IV with vacutainer, (2) a 21-gauge direct vacutainer, (3) an 18-gauge butterfly with vacutainer, and (4) an 18-gauge butterfly with syringe draw. The abundances of a panel of 122 proteins (117 proteins, plus 5 matrix metalloproteinase (MMP) proteins) were targeted by LC/MRM-MS. In addition, complete blood count (CBC) data were also compared across the four techniques. Phlebotomy technique significantly affected 2 of the 11 CBC parameters (red blood cell count,  $p = 0.010$ ; hemoglobin concentration,  $p = 0.035$ ) and only 12 of the targeted 117 proteins ( $p < 0.05$ ). Of the five MMP proteins, only MMP7 was detectable and its

concentration was not significantly affected by different techniques. Overall, most proteins in this exploratory study were not significantly influenced by phlebotomy technique; however, a larger study with additional patients will be required for confirmation.

Reference:

Penn, A.M., Lu, L., Chambers, A.G., Balshaw, R.F., Morrison, J.L., Votova, K., Wood, E., Smith, D.S., Lesperance, M., Del Zoppo, G.J. and Borchers, C.H. (2015) Exploring phlebotomy technique as a pre-analytical factor in proteomic analyses by mass spectrometry. Genome. July 10th. .

**Thank you to our partners for supporting IVTEAM**

