ABSTRACT

Poor availability of high quality biospecimens is one of the most frustrating obstacles to cancer biomarker research. To overcome this problem for our NCI-funded Clinical Proteomics Technology Assessment for Cancer (CPTAC) biomarkers center program, the Purdue University/Indiana University team turned to a professional organization to obtain the required human samples for this program. The Hoosier Oncology Group (HOG) is a not-for-profit organization of practicing oncologists across Indiana and the region with management of oncology patient recruitment for biospecimen procurement and recruitment to clinical trials. HOG provides specific training in best practices for sample collection and processing as well as full collection documentation and materials for reproducible and trouble-free patient sample collection in the doctor’s office. HOG manages the primary Institutional Review Board approval and generates approved informed consent documentation. The group activates their existing network of oncologists to implement the sample collection protocol. Relevant de-identified patient clinical information is also collected and supplied with the biospecimens to facilitate interpretation of research results. Because the network of oncologists is not confined to a major metropolitan medical center, patient demographics are diverse and more accurately represent urban and rural populations. The group also engages physician members to obtain control samples from healthy volunteers.

We describe the standardized collection protocol and process employed by HOG for plasma, serum and whole blood sample collection for our program. In addition, we will present results from proteomic profiling of the human plasma samples with liquid chromatography/mass spectrometer based approaches. Our analytical evaluation provides evidence for complex proteomics profiles from these samples, as expected. We will also present data from samples assessed at various time points after collection that indicates continued integrity and utility for HOG-collected plasma samples held at -80°C.

CONCLUSIONS

• Best practices at HOG for collection of clinical trails samples provide excellent biospecimens for proteomic evaluation.

• The Agilent integrated chip cube nano-chromatography system enables highly reproducible analysis of human plasma samples on the Agilent proteomics platform.

• The HOG sample collection partnership and the analytical platform at the Bindley Bioscience Center allow for comparable proteomic analyses over extended periods of time.

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