Precise quantitation of protein biomarkers in clinical tissue specimens is a prerequisite for accurate and effective diagnosis, prognosis, and personalized medicine. Although progress is being made, protein analysis from formalin-fixed and paraffin-embedded tissues is still challenging. In previous reports, we showed that the novel formalin-free tissue preservation technology, the PAXgene Tissue System, allows the extraction of intact and immunoreactive proteins from PAXgene-fixed and paraffin-embedded (PFPE) tissues. In the current study, we focused on the analysis of phosphoproteins and the applicability of two-dimensional gel electrophoresis (2D-PAGE) and enzyme-linked immunosorbent assay (ELISA) to the analysis of a variety of malignant and non-malignant human tissues. Using western blot analysis, we found that phosphoproteins are quantitatively preserved in PFPE tissues, and signal intensities are comparable to that in paired, frozen tissues. Furthermore, proteins extracted from PFPE samples are suitable for 2D-PAGE and can be quantified by ELISA specific for denatured proteins. In summary, the PAXgene Tissue System reliably preserves phosphoproteins in human tissue samples, even after prolonged fixation or stabilization times, and is compatible with methods for protein...
analysis such as 2D-PAGE and ELISA. We conclude that the PAXgene Tissue System has the potential to serve as a versatile tissue fixative for modern pathology.