Proteomic analysis of PAXgene-fixed tissues.

Abstract:
Formalin fixation and paraffin embedding is the standard technique for preserving biological material for both storage and histological analysis. Although recent progress has been made in the molecular analysis of formalin-fixed, paraffin-embedded (FFPE) tissues, proteomic applications are a special challenge due to the cross-linking property of formalin. Here we present the results of a new formalin-free tissue fixative, PAXgene, and demonstrate successful extraction of nondegraded and immunoreactive protein for subsequent standard protein assays, such as Western blot analysis and reverse-phase protein arrays. High amounts of protein can be obtained from PAXgene-fixed, paraffin-embedded (PFPE) mouse liver and human spleen, breast, duodenum, and stomach tissues, similar to frozen material. By Western blot analysis, we found that the detection of membrane, cytoplasmic, nuclear, and phosphorylated protein from PAXgene-fixed human tissue samples was comparable to cryopreserved samples. Furthermore, the distribution of protein in PAXgene-fixed human tissue specimens is adequate for matrix-assisted laser desorption/ionization (MALDI) imaging mass spectrometry for in situ proteomic analysis. Taken together, we demonstrate here that PAXgene has great potential to serve as a novel multimodal fixative for modern pathology, enabling extensive protein...
biomarker studies on clinical tissue samples.

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