**Dried Matrix Spot Analysis – Analysis of Drugs from Tears and Other Translucent Fluids Using a Novel Color Indicating Technology**

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**Objectives**:  Traditional analyses on fluids, such as synovial fluid, tears, or cerebral spinal fluid (CSF) have been cumbersome due to sample volume limitations.  Conventional dried blood spot (DBS) techniques use blood as the fluid, which is easy to visually detect and punch for analysis. However, translucent fluids spotted on DBS cards are much more difficult to detect visually. The objective of this work is to apply DBS techniques to the analysis of fluids other than whole blood, for which we will identify the technique as dried matrix spotting (DMS).  DMS techniques have provided an alternative collection/extraction method to traditional forms of analysis for low volume assays or matrices such as urine or plasma that require sample storage in low temperature freezers. **Methods**:  As an example assay, here we present data on the development of a method for the analysis of tobramycin from tears.  In order to accurately see the tears on the collection paper, a novel dye technology was developed for visualization of the sample spot from the translucent fluid (tears).  An aliquot of tears containing tobramycin was spotted on DMS collection paper.  These spots were punched out of the collection paper and extracted using an organic solvent.  The extracts were analyzed by HPLC/MS/MS using a Sciex API-4000 mass spectrometer.  **Results**:  The results indicate that the assay is accurate (±10%) and precise (±5.7%).  Matrix effects were minimal with a matrix factor observed to be 0.97.  **Implications**: The novel dyeing technique developed with DMS sample collection/extraction techniques can be used to develop assays for translucent fluids such as tears.  This research has other implications including applications to CSF, synovial fluid, dialysate and in-vitro incubations.