METHOD OPTIMIZATION FOR THE ANALYSIS OF SMOKELESS POWDERS BY ELECTROSPRAY IONIZATION-ION MOBILITY-MASS SPECTROMETRY

Nicholas Weis, Howard Holness and José Almirall

International Forensic Research Institute, Department of Chemistry and Biochemistry, 11200 SW 8th Street, Miami, FL, 33199

The following presentation describes a method for the rapid analysis of smokeless powders utilizing electrospray ionization ion mobility mass spectrometry. The advantages of this technique over conventional chromatographic analysis will be highlighted revealing analytes that are typically difficult to detect from six different brands of commercially available smokeless powders. The results reveal that four different compounds present in the smokeless powders could be detected with this method. Those compounds include diphenylamine (DPA), methyl centralite (MC), diethyl phthalate (DEP) and ethyl centralite (EC), with DPA, MC and EC being detected from the actual smokeless powder samples themselves. Of the six smokeless powders analyzed, four were able to be differentiated by brand using the ESI-IMS-MS method. The results give a rapid alternative to current methods whereby unburned smokeless powders may be screened and differentiated.