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Jonathan

Thanks for the valuable info. Bill has actually discussed with me that he felt this approach (APPI) would work for the analysis of PAHs - looks like he is right. I am going to try to get the details of this method.

Thanks
Crystal

From: Wilkins, Jonathan M
Sent: Tuesday, July 22, 2008 4:24 PM
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Determination of 10 Carcinogenic Polycyclic Aromatic Hydrocarbons in Mainstream Cigarette Smoke

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Abstract:

Polycyclic aromatic hydrocarbons (PAHs) are one class of chemical compounds that (1) are present at low to trace levels in unburned cigarette filler, and (2) are predominantly generated during combustion. According to a recent report of the International Agency for Research on Cancer, 10 carcinogenic PAHs together with 53 other known carcinogens are present in cigarette smoke. Accurate quantification of these chemicals helps assess public health risk to both smokers and nonsmokers exposed to second-hand smoke. We have developed and validated a specific and sensitive method for measuring these 10 carcinogenic PAHs in the particulate phase of mainstream tobacco smoke. Cigarette smoke particulate, produced using standard machine

smoking protocols, was collected on glass fiber Cambridge filter pads. The particulate matter was solvent extracted, purified by solid-phase extraction, and analyzed by liquid chromatography/atmospheric pressure photoionization tandem mass spectrometry using isotopically labeled analogues as internal standards. Our method's limits of detection ranged from 11 to 166 pg and achieved sufficient reproducibility and accuracy to provide useful information on a range of cigarettes having dramatically different machine-smoked tar and nicotine deliveries. The identity of each PAH analyte was established from chromatographic retention time, analyte-specific fragmentation patterns, and relative peak area ratios of the product/precursor ion pairs. This new method provides higher sensitivity, specificity, and throughput than did earlier methods. We found relatively consistent PAH levels among a selection of domestic full-flavor cigarettes. The PAH levels in smoke from highly ventilated light and ultralight cigarettes were low when smoked using ISO (International Organization for Standardization) conditions. However, if highly ventilated cigarettes were smoked under more intense conditions (e.g., larger or more frequent puffs, vents blocked), their PAH levels equaled or exceeded their full-flavor counterparts under ISO conditions.

Keywords: Polycyclic aromatic hydrocarbons; mainstream cigarette smoke; LC-APPI-MS/MS

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