Effectiveness of Deactivated Quartz Insert in Trace Analysis

Analysis of Strong Bases (nicotine, cotinine) Using Ultra ALLOY-WAX(KOH)

As the mount of highly polar compounds to be analyzed becomes less and less, they tend to be influenced by the inertness of the insert, along with the column inertness and liquid phase characteristics. In an example here, Nicotine and cotinine were analyzed using Ultra ALLOY-WAX (KOH) column, a column designed for analysis of basic compounds (Fig.1), and the difference in inertness of the insert was compared by looking at the cotinine peak. When deactivated quartz insert was used, with 0.1ng of the sample injected, there was a linear relationship between the amount injected and the peak area. On the other hand, when untreated quartz insert was used, absorption began to be observed at several nanograms of injection. In analysis of highly polar species, it is therefore vitally important to use a highly deactivated quartz insert, because of their tendency to easily undergo decomposition and absorption at active spots inside the injection port (Fig.2). Frontier Laboratories offers highly deactivated quartz inserts available (P/N: GC1-2215 for HP GCs, P/N: PYS1441 for Shimazu GC-14, P/N: PYS1741 for GC-17). These inserts are made by our proprietary technology developed for Ultra ALLOY columns to further enhance durability and inertness, in addition to conventional treatments with silanes such as HMDS.

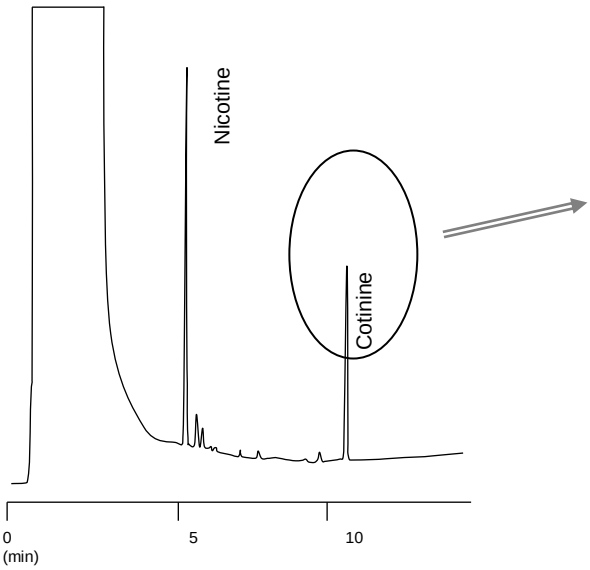

Fig. 1 Chromatogram of Nicotine and Cotinine (5 ng)

Col.: Ultra ALLOY®-WAX (KOH) (Polyethyleneglycol)
Length :30 m, Id 0.25 mm, Film thickness: 0.2 5 µm
Oven temp. : 50~220 ºC at 20 ºC/min, Injector: Splitless at 250 ºC
Detector : FID at 270 ºC, Carrier gas: He, 30 cm/s

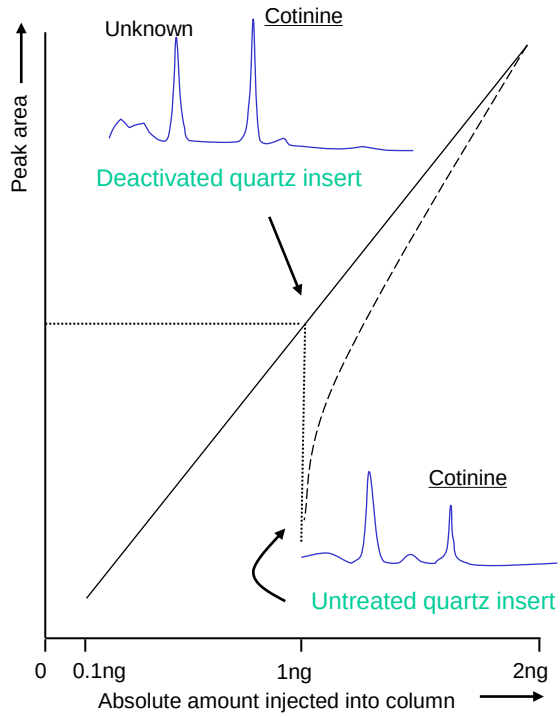

Fig. 2 Insert Activity Dependent Chromatogram and Calibration Curve When 1ng of Cotinine is Injected

Keywords : Analysis of Basic Compounds, Deactivated Quartz Insert

Products used : Multi-functional pyrolyzer, Ultra ALLOY®-WAX (KOH)

Applications : Analysis Agricultural Chemicals, Analysis of Pharmaceutics, Analysis of Strong Bases

Related technical notes :

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