

[P-81]

Levels of 14-Polycyclic Aromatic Hydrocarbons in Meat Products

Hyomin Lee, Eunkyung Yoon, Gunyoung Lee, Hyeonjeong Kim, Kyungah Park, Yunhee Kim, Jisun Yang

National Institute of Toxicological Research, Korea Food and Drug Administration

Food is a significant source of polycyclic aromatic hydrocarbons (PAHs) to which humans are exposed. In this study, we analysed 14 PAHs in baked and smoked meats known as major source of PAHs, and defined a correlation between benzo(a)pyrene and pyrene to compare estimating risk from human exposure to PAHs with urinary 1-hydroxypyrene. Food samples including hamburger patty, bacon, ham, charcoaled pork, and barbecued chicken were extracted for PAHs by using Soxhlet extraction and purification with a Sep-Pak Florisil Cartridge. The solution obtained was used for analysis by HPLC using Supelcosil LC-PAH column (25 cm×4.6 mm) with C18 Guard column. HPLC analysis was performed with fluorescence detector (Detector 3013, Shiseido) using three different excitation/emission wavelength combinations : 267/384nm, 290/410nm, 293/498nm. The highest level of total PAHs was found in hamburger (133.3ppb). Furthermore, the toxic equivalency factor (TEF) adjusted concentration of PAHs in hamburger (TEQB(a)P μ g/kg) was higher than other foods : charcoaled pork (2.18 TEQB(a)P μ g/kg), ham (1.92 TEQB(a)P μ g/kg), bacon (1.73 TEQB(a)P μ g/kg), and barbecued chicken (1.44 TEQB(a)P μ g/kg).

Concentrations of benzo(a)pyrene and pyrene were determined to be in the range 0.2ppb~0.8ppb and 3.0ppb~9.5ppb in foods, respectively. The ratio of benzo(a)pyrene to pyrene was 0.09~0.17 except charcoaled porks (0.02). A significant correlation ($r^2=0.74$) was found only after removing charcoaled pork in comparison benzo(a)pyrene to pyrene.

Keyword : PAHs, Toxic equivalency factor (TEF)