

Polycyclic Aromatic Hydrocarbons in cereals, vegetables and traditionally smoked foods

Research programme: Chemical hazards in food and feed

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Conducted by: FERA

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Background

Food consumption is a significant route of exposure to PAHs. Food can be contaminated with PAHs from environmental sources, industrial food processing and from certain home cooking practices. The European Food Safety Authority (EFSA) has focused on 16 PAHs that may potentially cause cancer and advised that exposure to these PAHs should therefore be as low as reasonably practicable. In their 2008 opinion, EFSA concluded that the sum of four PAHs, (benzo[a]pyrene, chrysene, benz[a]anthracene and benzo[b]fluoranthene,) referred to as PAH4, or the sum of 8 PAHs (referred to as PAH8) are the most suitable indicators of the presence of PAHs in food.

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Research Approach

The 230 samples were tested for 28 PAH compounds, including 16 prioritised by the European Food Safety Authority (EFSA) and Joint FAO/WHO Expert Committee on Food Additives (JECFA) as being harmful to health. The 230 samples consisted of 120 traditionally smoked foods, 70 processed cereal and cereal products and 40 vegetables and vegetable products.

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Results

In general, the food products measured in this survey contained low levels of PAHs. The concern for human health is low and there is no need for consumers to change their eating habits.

The 16 PAHs identified by EFSA as harmful to health were found at low levels and were frequently undetected, particularly in vegetable and cereal based foods. As might be expected, higher concentrations of PAHs were generally found in traditionally smoked fish products - 4 samples of hot smoked fish exceeded the current regulatory limits for benzo[a]pyrene. Local enforcement authorities investigated the companies whose products were non-compliant and advised them to explore the feasibility of changes to raw material sources and production processes in order to reduce PAH levels in their products.

All but one of the other 116 smoked fish and meat products sampled complied with the lower limits for benzo[a]pyrene and PAH4 that will come into force in 2014, indicating that compliance

should be readily achievable for the small number of products that exceeded current regulatory limits.

Our organisation carried out a risk assessment for the cereal and vegetable groups as these food groups do not have maximum limits for PAHs. This showed that these groups provide a minor contribution to total exposure to PAH4 indicating a low concern for health.

Research report

England, Northern Ireland and Wales

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