

Research Stays 2017

Chemical tracers of particulate matter from domestic sources

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Objectives

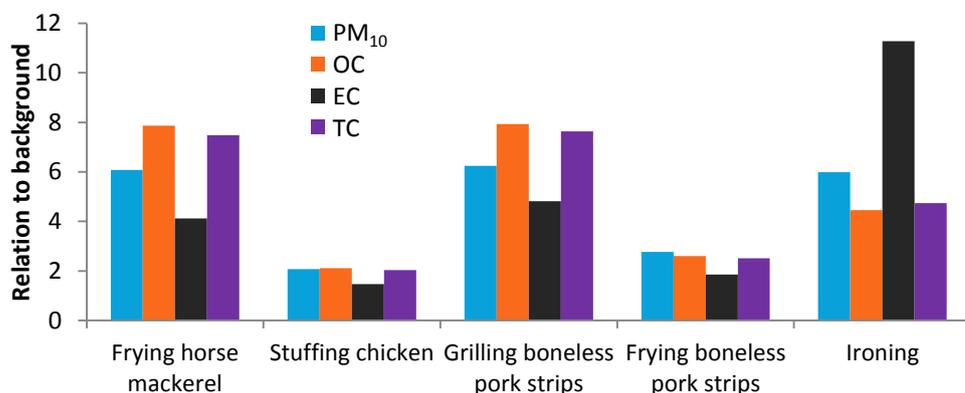
The main objective of this work is to quantify and characterize the particulate matter (PM) emitted from cooking and ironing to identify chemical tracers related to these activities. These data are necessary for identifying and quantifying the contribution of these domestic sources in source apportionment studies.

Methodology

- Particulate matter concentrations were determined by weighting the filters after proper conditioning at controlled temperature and humidity
- Carbonaceous fraction (OC and EC) was analyzed by using a thermal-optical system
- Solvent extraction and fractionation were accomplished for the analysis of organic components, which were later determined by GC-MS
- Inorganic ions were determined by ion chromatography after US extraction

Results

Both cooking and ironing had demonstrated to significantly increase the levels of particulate matter, specially the carbonaceous fraction.



For cooking, grilling led to the highest PM₁₀ and carbonaceous matter levels, whereas emissions from frying fish, due to a higher fat content, were significantly higher than those from frying pork.

Highlights

- PM from domestic activities has been characterized
- Differences between emissions from different cooking methods and foods were observed
- From the obtained data, chemical tracers of cooking and ironing could be identified

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