

Pan-frying meat with gas may be worse than electricity for raising cancer risk

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Frying meat on a gas hob may be more harmful to health than using an electric hob, because of the type of fumes it produces, suggests research published ahead of print in *Occupational and Environmental Medicine*.

Professional chefs and cooks may be particularly at risk.

Cooking fumes produced during high temperature frying have recently been classified as "probably carcinogenic" by the International Agency for Research on Cancer (IARC).

Potentially harmful [polycyclic aromatic hydrocarbons](#) or PAHs for short, heterocyclic amines, and higher and mutagenic aldehydes, along with fine and [ultrafine particles](#), have all been found in cooking fumes, using vegetable oils, such as safflower, soya bean, and rapeseed oils, as well as lard.

But it is not clear if the energy source or the type of fat used for cooking have any impact on fume content.

The research team simulated the conditions found in a typical Western European restaurant kitchen, frying 17 pieces of steak, weighing 400 g each, for 15 minutes.

They used either margarine or two different brands of soya bean oil to cook the steak on gas and electric hobs. The margarine contained a blend of soya bean, rapeseed, coconut and palm oils as well as vitamins A and

D, but no hydrogenated fats.

They measured the amount of PAH, aldehydes, and total particulate matter produced in the breathing zone of the cook.

Napthalene - a banned chemical contained in traditional mothballs - was the only PAH detected and ranged from 0.15 to 0.27 ug/m³ air in 16 of the 17 meat samples. The highest levels were produced when frying with margarine on the gas hob.

Higher aldehydes were produced during the frying of all the samples, while mutagenic aldehydes were produced for most samples.

Overall levels ranged from undetectable to 61.80 ug/m³ air, but the highest levels were found when frying on the gas hob, irrespective of the type of fat used.

The peak number of ultrafine particles during frying on the gas hob was considerably higher than when cooking with electricity. Particle size with gas was 40 to 60 nm compared with 80 to 100 nm with electricity. Ultrafine particles are more readily absorbed into the lung.

The authors point out that the levels of PAHs and particulate matter found during this study were below accepted occupational safety thresholds. But they add that cooking fumes contain various other harmful components for which there is as yet no clear safety threshold, and gas cooking seems to increase exposure to these components.

"Exposure to cooking fumes should be reduced as much as possible," they caution.

Provided by British Medical Journal

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