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## Barbecuing - It Can Be Bad for You

Barbecuing continues to be a popular way to cook meat, fish and poultry, and not just in the summer months. Health experts, however, are now warning people of the potential production of cancer causing compounds when cooking at high temperatures.

Within the muscle tissue of all animal products that we consume there resides a chemical known as creatine. When creatine is heated at high temperatures (common to barbecuing as well as roasting, pan-frying and broiling), it reacts with the amino acids in the protein. This reaction forms cancer producing heterocyclic amines (HCAs), and if you like to barbecue with a tomatoe-based products (i.e. BBQ sauce) this will further increase the formation of HCAs.

Another class of cancer producing compounds, known as polycyclic aromatic hydrocarbons (PAHs), can develop when the fat of the meat drips onto the hot coals. As the smoke rises from the coals, it brings along the cancer producing compounds with it. This in turn becomes attached to the surface of the barbecued food.

Does all this mean you should chuck the “barbie” off the porch and stop barbecuing? Of course not, as with everything else, moderation is the key. The Canadian Cancer Society and the American Cancer Institute advise that cooking with high temperatures is fine occasionally, and recommend the following tips to minimize HCAs and PAHs.

1. Thaw frozen meat, fish and poultry thoroughly and pre-cook in a microwave or regular oven. This will shorten the cooking time, which will reduce the ability of cancer causing compounds to form on the surface of the meat. Discard any excess liquid as it contains creatine, which serve as a primer for the production of HCA's when heated.
2. Turn meat frequently.
3. Mix a few chopped tart cherries into your hamburger. The antioxidants in the cherries will help to cancel out most of the HCAs.
4. Choose hardwood charcoal as it burns at a lower temperature than mesquite or softwood charcoals. Lower temperatures translate to less cancer producing HCA's. Note that gas grills also tend to have lower cooking temperatures.
5. Keep aluminum foil under food to prevent fat from dripping on to the coals and producing cancer-causing compounds (PAHs).

6. Choose only lean cuts of meat and poultry and trim away any excess fat to avoid flare-ups and keep a water bottle close by to douse any flare-ups. It is also recommended to avoid basting your meats with fats or oils *before* or *during* barbecuing.
7. Keep the food high above the coals or burner. This will reduce the temperature, as well as reducing the amount of smoke that reaches the surface of the food.
8. Marinate your meat using at least one acidic component like lemon juice, orange juice or vinegar. Not only do marinades add flavour to food and tenderize the meat, but an acidic marinade may also reduce the formation of HCAs by as much as 92-99 percent.
9. Avoid inhaling barbecue smoke.
10. Cook fish and poultry with their skin on and then discard it before consuming it. The skin will trap most of the cancer-causing PAHs.
11. Grill soy products, veggie burgers, vegetables and even fruit instead of meat or poultry. All have fewer amounts of fat, HCAs do not attach to them and they are particularly recommended if you have a strong family history of cancer or heart disease.
12. Switching from charcoal to a gas or electric grill can eliminate the smoke hazard. If you do use charcoal, avoid using lighting fluid or self-lighting packages of charcoal briquettes - both add residues from toxic chemicals to food.