

Cancer and diet ^[1]

Dear Alice,

Are there any health hazards associated with Chinese food? Of course a lot of Chinese foods are high in fat and cholesterol, but what I am worried about is the cooking methods. Generally, they heat the oil to a very high temperature and then throw in the meat or vegetable and make a big sound, sometimes the food even catches fire. As far as I know, I think oil heated to a high temperature, to the point where it begins to emit smoke, may contain cancer-causing substances. Is that true?

I guess I am kind of obsessed about cancer because my grandfather died of stomach cancer two years ago and I was with him for several months before he died. What are the major causes of cancer? How can we avoid them? If we eat some cancer-causing substance, are we more likely to get stomach or intestinal cancer because that's where the food passes through, or are we equally likely to get other cancers? I mean, do a person's digestive organs have a particularly high susceptibility to cancer compared to other parts of the body because they are exposed to the food, which is where almost all the carcinogens come from?

— Worries about cancer and diet

Answer

Dear Worries about cancer and diet,

Losing a grandparent can be difficult, so it's understandable that you're doing some investigating into the disease from which your grandfather died. The major causes of cancer vary, but some common causes include genetics, nutrition, physical activity, tobacco use, exposures to infectious agents, and a number of other causes. While it's tempting to make generalizations about which cultures have more or less healthy cuisines, it might be more useful to consider how specific ingredients and cooking methods possibly impact your overall health. Additionally, certain foods are more likely to contribute to cancer in the stomach or colon than in other areas of the body (more in a bit). Research has shown that certain cooking methods, including those you mentioned, can increase the likelihood of forming carcinogens (cancer causing substances) in the food being prepared. While it may be impossible to avoid all carcinogens, there are strategies you may try to decrease your risk of developing cancer, while still enjoying Chinese food — or

any cuisine for that matter.

First, some information about cancer: cancer isn't one disease, but actually a group of diseases caused by the abnormal division and growth of cells in the body, often in a specific organ or tissue. Both genetic makeup and environmental exposure to carcinogens play a part in cancerous formations. It's worth noting that coming into contact with carcinogens doesn't necessarily guarantee the development of cancer. In fact, there are a number of factors that influence carcinogen-driven cancer formation; these include how long you're exposed to the carcinogen, the intensity of the exposure, and how it interacts with your genetic makeup. Some carcinogens cause cancer by altering the deoxyribonucleic acid (DNA) itself and some simply cause cells to divide rapidly, increasing the chances of a cancer-causing DNA mutation.

Research suggests that people with eating patterns high in certain kinds of foods are more likely to develop cancer at some point in their lives. Most notably, diets that include a lot of meats, animal products, and fats seem to increase risk. Within the meat category itself there are distinctions — red meats such as beef, lamb, and pork are considered, by experts, to carry a greater risk of cancer (especially colorectal cancer) than white meats including chicken, turkey, and other poultry. Processed meats, such as bacon, jerky, and deli meats, have been categorized as Group 1 carcinogens [2] (which means they are carcinogenic to humans), as studies have found a correlation between consuming these processed meats and the development of stomach cancer. By contrast, diets high in fruits, vegetables, and fiber have been shown to reduce cancer risk, which is likely due to the protective effect that fiber (found predominantly in fruits and vegetables) has against cancer in the body. It's also been found that limiting consumption of salt-preserved foods (e.g., salted fish, pickled veggies, etc.), removing the charred edges of meat, adding regular calcium to your diet, and even drinking coffee may help reduce the risk of developing certain cancers.

In addition to what foods you eat, the way it's prepared can also factor into the risk for cancer. This gets back to your question about hot cooking oil: yes, cooking foods at a high temperature can generate carcinogens — specifically heterocyclic amines (HCAs) and polycyclic aromatic hydrocarbons (PAHs) — inside the meat being cooked. Grilling, frying, or broiling food has been shown to increase the amount of HCAs in meat. Cooking methods such as direct flame gas grilling and smoking seem to generate the most PAHs in meats, while indirect flame gas grilling, pan-frying, microwave cooking, and steaming appear to produce progressively fewer PAHs. Generally speaking, increasing temperature and cooking time tends to increase the number of HCAs and PAHs in food. Carcinogens aren't limited to meats; another cancer causing substance, acrylamine, is formed when plant based foods high in carbohydrates (such as potatoes, breads, and pastries) are cooked at high temperatures by frying, roasting, or baking. Simply reducing, rather than eliminating, the amount of fried and grilled foods you eat can also make a difference. If you want to maintain a lower-risk pattern of eating, you can be selective about the kinds of food you order from restaurants or try cooking them for yourself at home.

Eating a diet that limits frying and grilling meat isn't the only way to reduce your risk of developing cancer. Health professionals also recommend limiting alcohol consumption, avoiding smoking, maintaining safer sex practices, and avoiding overexposure to UV radiation (like from the sun!).

For questions or concerns about your eating patterns, consider talking with your health care

provider or a registered dietitian. If your worries about cancer are negatively impacting your day-to-day life or you just want to talk with someone about your experience with your grandfather, you may want to make an appointment with a mental health professional. Balancing long-term health concerns such as cancer with everyday dietary concerns can be challenging, but being informed about the risks and benefits associated with certain foods is a great first step to a long and healthy life.

Alice!

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