

Ask Leyla: AGEs: What are they, and how can I reduce my consumption of them?

Q: Recently I have been reading about AGEs, particularly about the amount of AGEs in various foods. I hear meats are among the highest, especially when roasted, grilled or otherwise cooked at high temperatures. Is this true? Could you explain what exactly AGEs are, and how concerned a person should be about the amount of AGEs in their diet?

A: Advanced glycation end products (AGEs) are compounds that form when sugar reacts with amino acids—the building blocks of protein. Glycation induces damage in the body via oxidative stress and inflammation, resulting in the development of many of our chronic degenerative diseases such as cardiovascular disease, insulin resistance and type 2 diabetes, as well as Alzheimer's disease (aka "type 3 diabetes").



There are two ways AGEs form: in the foods we eat and inside our bodies.

Dry heat cooking such as grilling, roasting and broiling promotes AGE formation above and beyond the amount contained in foods in their raw state, but marinating meats beforehand with vinegar or citrus-based dressings such as lemon juice will greatly reduce AGE formation.

Cooking with moist heat such as boiling, poaching and stewing significantly reduces the formation of AGEs. Therefore these cooking methods are recommended over dry heat cooking. Using lower heat temperatures and longer cooking times is also helpful.

Processed foods and sugary foods are also high in AGEs. In fact, sugars are extremely proinflammatory, speeding up the aging process by promoting endogenous AGE formation. AGEs accumulate in the brain, kidney, arteries and skin as we get older. In fact, the extensive cross-linking of collagen molecules decreases skin elasticity and promotes the development of wrinkles and sagging skin.

And did you know that sleep deprivation can propagate higher circulating AGEs? We need ample amounts of sleep for tissue growth and repair so we can defend against AGEs. Sleep, physical activity, diet and stress reduction all help to reduce the burden of AGEs.

Here are some tips from the AGE Foundation for reducing AGEs:

- Eliminate sugar and processed foods
- Eliminate fried foods and choose cooking methods that reduce the amount of oils used
- Use a slow cooker
- Cook foods in water (moist heat) through boiling, steaming or poaching
- Marinate foods in acidic or citrus-based sauces such as lemon juice
- Get seven to nine hours sleep every night
- Exercise daily
- If you are overweight, obese or have high blood pressure, get treatment

To your health!