

Nitrates and Nitrites



The terms nitrates and nitrites are probably familiar. Both are chemicals that occur naturally in soil and are taken up by growing plants. Through this route, nitrates and nitrites are found in many of our foods. They can also be manufactured in the lab, generally as sodium or potassium nitrate or nitrite. Both synthetic and naturally occurring versions can be added to foods as a preservative. Nitrates and nitrites are distinct, yet closely related, chemicals. Both nitrates and nitrites have the potential to be healthy or harmful, depending on one's overall diet.

Primary dietary sources of nitrates and nitrites:

About 80% of the nitrates that occur naturally in the foods we eat are from root vegetables or green leafy vegetables, such as beets, carrots, spinach, lettuce and cabbage. Many of the foods we eat might also contain nitrates and nitrites from fertilizers or from additives during food processing, most notably during meat-curing processes. Also, we consume nitrates through drinking water, but these levels are monitored, regulated and kept very low.

Role of nitrates and nitrites in curing processes:

Nitrates and nitrites enhance the flavor and color quality in meats. They also help preserve



meats by slowing down bacterial growth. Cured meats, such as salami, ham, sausage and hot dogs, are typically treated with nitrates and nitrites, which gives these items their characteristic umami flavor and red or pink color.



Umami, along with sweet, sour, bitter, and salty, is one of five basic and unique tastes. Umami can be described as a savory, rich or meaty flavor.

Other foods such as poultry, fish and cheese could also be cured with nitrates and nitrites. The flavor and color qualities make these foods appealing and popular. As a food preservative, nitrates and nitrites slow food spoilage, reduce potential for foodborne illness and increase the shelf life of food products.

Are nitrates and nitrites healthful or harmful?

Well ... that depends on the source and the amount. Once we begin to chew foods that contain nitrates, the saliva in our mouths turns the nitrates into nitrites, which is how they are absorbed. Most of these nitrates are excreted in our urine. The remaining nitrites could be broken down in our digestive tracts. They could also be converted to nitric oxide, which helps lower blood pressure, among other health benefits. On the other hand, if eaten as part of a protein food — especially if prepared at a high cooking temperature — the nitrites could form nitrosamines, most of which are carcinogens. These could be harmful.

Vegetables and other plant foods containing naturally occurring nitrates and nitrites have a positive effect on health and are a major part of a healthy diet. Processed meats, which contain added or artificial nitrates and nitrites, could be part of a healthy diet if eaten only in moderate amounts. Foods rich in vitamin C or other antioxidants from, for example, fruits, vegetables or spices, could reduce the production of nitrosamines from nitrites in processed foods.

This is just another reason to include fruits and vegetables with each meal!



What to do:

- Read labels to know which processed food products contain sodium or potassium nitrates and nitrites. Try to limit these foods to only a few times a week.
- In general, limit your intake of processed meats and cold cuts, such as bacon, sausage, bologna or hot dogs, to two to three times per week.
- Consider organic food products. Synthetic nitrates and nitrites are not allowed as preservatives in organic packaged foods and meats.
- Eat a diet high in antioxidants — colorful vegetables, berries, garlic, nuts, green teas and even a little dark chocolate!



Give it a try ...

- Add just a few more vegetables or some fruit to your meals or snacks.
- Eat cured or processed meats just a little less.

Over time, these **small changes** can make a **big difference** in your health and the health of your family!

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Pub. 3705 Online Only 11/19

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