PBD 045 June 2013

Say NO to Disease

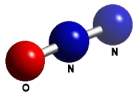
Preventing and reversing disease by generating Nitric Oxide with WHOLE FOODS

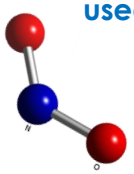
What is NO?

NO stands for Nitric Oxide, a combination of one molecule of Nitrogen and one molecule of Oxygen NO

What NO is not

not nitrous oxide, "Laughing gas" used in the dentist's office N_2O





not nitrogen dioxide, an air pollutant NO_2

What does NO Do? NO is a chemical messenger that signals

- arteries to relax and expand
- immune cells to kill bacteria and cancer
- brain cells to communicate
- oxygenation of tissues

NO can:

- prevent high blood pressure
- keep arteries flexible
- lower cholesterol
- limit swelling and pain of arthritis
- prevent, slow or reverse arterial plaque
- protect bones from osteoporosis
- help protect skin from sun damage
- reduce risk of developing dementia
- reduce formation of blood clots
- reverse erectile dysfunction
- reduce risk of diabetes and complications like kidney disease, blindness and limb amputations

Where do we find NO?

We make NO in our bodies from nitrates and nitrites in our food

I thought nitrites and nitrates were dangerous?

Nitrites and nitrates found naturally in our food contribute to making NO. Nitrates and nitrites added as a preservative to meats, can make nitrosamines which are carcinogens. Amines from protein, in the presence of saturated fat and cooked at high temps can create nitrosamines. Foods to avoid would include cured and smoked meats like lunch meats, hot dogs and bacon. **Eating raw veggies does not contribute to cancer-causing nitrosamines.**

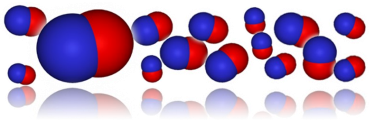
Stephanie Polizzi, MPH, RDN, CHES, FAND
631 Alder Street, Myrtle Point, OR 97458
stephanie.polizzi@oregonstate.edu

OSU Extension Family & Community Health
541-572-5263 ext 25291
extension.oregonstate.edu/coos/fcd

FCH16-09

PBD045 June 2013

Which foods make NO?



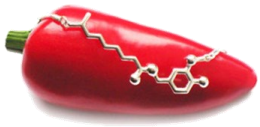
vegetables,

especially dark green leafys
beets and some fruits

High NO producers

Kale, Swiss chard, arugula, spinach, chicory, wild radish, bok choy, beet, lettuce, cabbage, mustard greens, raw cauliflower, parsley, kohlrabi, carrot and broccoli

Medium NO producers



Coleslaw, asparagus, celery, watercress, artichoke, eggplant, strawberry, potato, garlic, tomato, vegetable juice, vegetable soup, melon

Low NO producers

String beans, figs, prunes, sweet potato, raspberries, raisins, bananas, cherries, onion, bean sprouts chickpeas, red wine

Boosting NO production

1. Have RAW greens at every meal or at least daily
2. Cooking and dehydrating destroy NO-building capacity
3. Accompany greens with a source of Vitamin C
4. Consume foods high in polyphenol antioxidants like dark colored fruit, (berries), red wine or grapes, and dark chocolate (65% cacao or more)
5. Include exercise in your daily routine, 30 minutes is recommended
6. Fish oil and other unsaturated oils boost NO production
7. Refrain from using mouthwash since it can decrease NO production by at least 1/3

Steer clear of L-arginine supplements that boost NO.
They can be harmful, especially if you are over 40.

References

No More Heart Disease, Louis J. Ignarro
The Nitric Oxide Solution, Nathan Bryan and Janet Zand

This publication will be made available in accessible formats upon request.
Please call 541-572-5263 for information.

Stephanie Polizzi, MPH, RDN, CHES, FAND

Eat Fight Win

Registered Dietitian Nutritionist
Certified Health Education Specialist
Fellow of the Academy of Nutrition and Dietetics

Sign up for ***Wellness Ink,***
free monthly electronic newsletter
stephanie.polizzi@oregonstate.edu

or view on line at:
http://extension.oregonstate.edu/coos/fcd

Contact Us

Extension Family & Community Health

Coos County Extension
Ohlsen Baxter Building
631 Alder Street
Myrtle Point, OR 97458
541 / 572-5263

http://extension.oregonstate.edu/coos/fcd

Oregon State University

Go Green

Eating greens can heal disease

One of the many benefits of dark leafy greens is their ability to produce

Nitric Oxide

Stephanie Polizzi, MPH, RDN, CHES, FAND
OSU Extension
Family & Community Health

What is Nitric Oxide?

Nitric Oxide is a powerful messenger molecule in our body that:

- signals arteries to relax and expand, allowing more blood to flow
- triggers immune cells to kill bacteria and cancer cells reducing risk of disease
- helps brain cells to communicate reducing risk of dementia

Nitric Oxide is a combination of one molecule of Nitrogen and one molecule of Oxygen. It is sometimes referred to as NO or N-O.

What it is NOT

Nitric oxide is **NOT** the "laughing gas" used by your dentist (nitrous oxide)

And it is **NOT** nitrogen dioxide, an air pollutant

Although N-O is a free radical, it is **NOT** damaging to tissues, but is essential to health

What does N-O do?

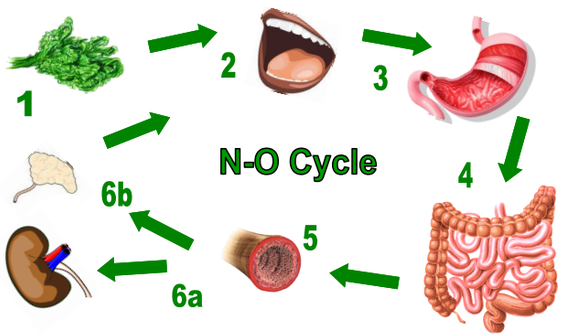
N-O is a gas that plays an important role in every cell of our body. Research indicates that N-O can:

- Prevent high blood pressure
- Keep arteries flexible
- Lower cholesterol and reduce plaque
- Reduce formation of blood clots
- Reduce risk of diabetes
- Limit swelling and pain of arthritis
- Protect bones from osteoporosis
- Protect skin from sun damage
- Reduce risk of developing dementia
- Reverse erectile dysfunction

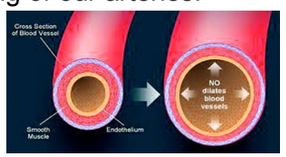
How does N-O work?

Nitric oxide is a gas we make within our own bodies from nitrates and nitrites found naturally in our foods. Good sources include dark green leafy vegetables like kale, arugula, Swiss Chard and spinach. Other great sources include beets, cabbage, cauliflower, carrots and broccoli.

When we chew these foods, friendly oral bacteria react with saliva to convert nitrates into nitrites (1). In the stomach, nitrites are converted to nitric oxide (3) where is goes into the blood stream (5) to meet the body's needs. Leftover nitrates and nitrites that are not converted to nitric oxide can be excreted (6a), or stored in the saliva glands (6b) or under the skin for later conversion into N-O.



Once nitric oxide enters the blood stream, it acts as a messenger to relax the smooth muscles within the lining of our arteries. When the muscle relaxes, the arteries widen, allowing for increased blood flow and circulation.



Worried about nitrates?

You may have heard that some nitrates and nitrites can cause cancer. *See next page.*

Heart Disease

Some heart patients take nitroglycerine tablets under the tongue to relieve angina pain, which is a function of restricted blood flow to the heart. Nitroglycerine pills help the body to create nitric oxide, which signals the arteries to expand and relax, allowing more blood to flow, thus helping to relieve angina pain.

Nitric Oxide can:

- Prevent high blood pressure
- Keep arteries young and flexible
- Prevent, slow or reverse arterial plaque
- Reduce formation of blood clots
- Lower cholesterol

Cancer and the immune system

- Nitric oxide signals the immune system to protect the body against bacteria and cancer cell growth
- N-O has been shown to stop the growth of cancerous tumors and protect the skin from sun damage that can lead to carcinoma
- Nitric oxide, when secreted as an immune response, is toxic to bacteria

The same mechanism behind nitroglycerine tablets is also behind the effectiveness of Viagra.® Nitric Oxide is the end product which increases blood flow, restoring erectile function.

Diabetes

Patients with diabetes are at high risk for vascular disorders such as hypertension, nephropathy and retinopathy.

Both Type 1 and Type 2 diabetes patients suffer from endothelial dysfunction (the innermost lining of the arteries). This dysfunction reduces blood vessel flexibility and increases the inflammatory response, influx of cholesterol and formation of blood clots, each of which contributes to diabetes and heart disease. Most diabetics suffer from heart disease as well as diabetes.

Nitric oxide can improve vascular function and responsiveness, and reduce progression and complications of both diabetes and heart disease.

Worried about Nitrates and Nitrites?

- Nitrates used for meat preservation can be converted to nitrosamines by stomach acid. Nitrosamines have been linked to cancer

- These nitrates and nitrites are not found naturally in the foods but are added in processing plants
- Nitrosamines form in the stomach when nitrites combine with amines (from amino acids) which are found in proteins like meat, fish and dairy
- Adding just 10% fat in the presence of protein can increase conversion of nitrites to nitrosamines instead of nitric oxide
- Diets high in saturated fats inhibit the production of nitric oxide, whereas unsaturated fats may improve N-O
- Nitrosamines can also be formed by frying at high temperatures
- Examples of foods with high risk of producing nitrosamines include processed meats like lunchmeat, hot dogs, ham, bacon and sausage
- Those who consume the most processed meats increase their risk of dying by 44%

Oral Health

Friendly bacteria on the tongue help reduce nitrates to nitrites found naturally in food. This is the first step in producing nitric oxide.

Interference with the healthy bacteria can reduce N-O production by at least one third.

The use of mouthwash kills the healthy bacteria that are necessary to produce nitric oxide.

Try using baking soda as a tooth paste and oral rinse.

Making Nitric Oxide with Food

The capacity to produce nitric oxide is reliant on nitrates from RAW vegetables like kale, Swiss chard, arugula, spinach and beets.

Cooking, boiling, steaming, broiling, baking and blanching all destroy the nitrates necessary for N-O production.

Eating raw greens and other vegetables will provide raw materials for making N-O.

Since nitric oxide is a healthy free radical, consuming foods with an antioxidants improve N-O capacity.

Include sources of vitamin C like oranges, kiwi, bell peppers and broccoli.

Polyphenols are powerful antioxidants found in dark-colored fruit like grapes, berries, red wine and chocolate. These foods will help boost available nitric oxide.

Exercise, sunlight and deep breathing also help the body to produce nitric oxide.

Supplementation

One N-O researcher has developed lozenges that have been shown to increase production of N-O. The product is called *NEO40®* and is available on line by going to www.neogenesis.com.

The amino acid supplement L-arginine has been sold mainly to athletes to help N-O production but this pathway declines after age 40. Supplementing with L-arginine may be harmful and is not recommended.

Kale and Beet Salad

Adapted from www.joyoushealth.com

Prep time 10 min
Serves 4 (about 1 cup each)

Ingredients:

1. 4 medium beets, grated (or 2 cups) RAW
2. 2 bunches kale, washed and ripped away from stems and then chopped
3. 1/3 cup pumpkin seeds
4. 6 med dates, chopped (remove the pit)
5. Optional ingredients: grated carrots, sunflower seeds, shallots or green onions, dried cranberries, walnuts or almonds, chia seeds or flax meal

Dressing:

1. 1/2 cup fresh lemon juice (from 1 lemon) (I use less, about 2 Tbsp to massage kale)
2. 1-2 Tbsp extra virgin olive oil
3. 1-2 Tbsp honey (to taste)
4. 1/2 teaspoon sea salt
5. Optional ingredients: garlic, 1 tbsp Dijon mustard

Instructions:

1. Remove kale from stems and chop.
2. Put kale into a large bowl and add about 1-2 tbsp. of lemon juice. Massage kale until it is about half the size (2 min).
3. Add to massaged kale, raw beets, pumpkin seeds and dates in a large bowl (and any additional ingredients or substitutions you may desire).
4. Whisk dressing ingredients together in a separate bowl. I warm the oil and honey in the microwave so it coats the salad better.
5. Pour over top of salad and mix well. Let stand 10 minutes to marinate.
6. Serve on a white plate or bowl for optimal eye-appeal.
7. You may want to serve optional additions like onions, nuts or

Nutrition Info

Servings Per Recipe: 4
Amount Per Serving
Calories: 124.4
Total Fat: 6.3 g
Cholesterol: 0.0 mg
Sodium: 541.3 mg
Total Carbs: 16.0 g
Dietary Fiber: 5.2 g
Protein: 4.6 g

http://www.joyoushealth.com/blog/2014/04/14/chopped-kale-beet-salad-recipe/