

# Anti-inflammatory Diet: Road to Good Health?

Experts discuss the potential disease-fighting benefits of diets that try to reduce inflammation.

By Kathleen Doheny; Reviewed by Louise Chang, MD; **WebMD** Feature

Unlike the typical diet, it doesn't have a catchy name. Nor does it promise you'll drop a size by Saturday. It's not even really a diet, per se, but actually an eating plan for life.

It's the so-called anti-inflammatory diet -- or rather, anti-inflammatory diets.

A half-dozen or more diet books are based on the anti-inflammatory idea -- and numerous web sites promote "anti-inflammatory" eating. Each has its own spin.

**Barry Sears, MD**, of The Zone diet fame and **Andrew Weil, MD**, the Harvard-trained natural and preventive medicine physician, say the anti-inflammatory diet is ideal for overall good health. Proponents of the diet say it can reduce heart disease risk, keep existing cardiac problems in check, reduce blood triglycerides and blood pressure, and soothe tender and stiff arthritic joints.

But experts concede that anti-inflammation eating is more effective for some health problems than others -- and that the scientific evidence for the disease-reduction benefits of these eating plans is still being gathered.

WebMD rounded up the top experts on anti-inflammatory diets to get some details.

## Why Anti-Inflammatory Diets?

While each plan has its own twist, all are based on the general concept that constant or out-of-control inflammation in the body leads to ill health, and that eating to avoid constant inflammation promotes better health and can ward off disease, says Russell Greenfield, MD, a clinical assistant professor of medicine at the University of North Carolina at Chapel Hill and a private-practice physician who studied under Weil.

"It's very clear that inflammation plays a role much more than we thought with respect to certain maladies," Greenfield tells WebMD.

"We always thought anything with an "itis" at the end involved inflammation," he says, such as arthritis or appendicitis. But even the illnesses without an "itis" at the end, such as cardiovascular disease, certain cancers, even Alzheimer's disease, may be triggered in part by inflammation, he says.

Sears calls inflammation a silent epidemic that triggers chronic diseases over the years. "You could feel fine but have high levels of inflammation," he warns.

The average American diet, Greenfield says, includes far too many foods rich in omega-6 fatty acids, found in processed and fast foods, and far too few rich in **omega-3 fatty acids**, such as those found in cold-water fish or supplements. When that balance is out of whack, inflammation can set in, Sears explains.

**Phytochemicals** -- natural chemicals found in the plant foods suggested on the diets -- are also believed to help reduce inflammation.

## **Anti-Inflammatory Diets: What Do You Eat?**

An exact description of the anti-inflammatory diet varies, depending on whom you ask. The anti-inflammatory diet is "probably very close to the **Mediterranean diet**," says Christopher Cannon, MD, associate professor of medicine at Harvard Medical School and a cardiologist at Brigham and Women's Hospital, Boston. He co-authored **The Complete Idiot's Guide to The Anti-Inflammation Diet**, which includes recipes for anti-inflammatory eating and information on vitamins.

An anti-inflammatory diet is the Zone diet with fish oil, says Sears, who wrote *The Anti-Inflammation Zone* and whose popular Zone diet recommends low-fat protein, carbs, and heart-healthy monounsaturated fats.

Specifics vary from diet to diet, but in general anti-inflammatory diets suggest:

- Eat plenty of fruits and vegetables.
- Minimize saturated and trans fats.
- Eat a good source of omega-3 fatty acids, such as fish or fish oil supplements and walnuts.
- Watch your intake of refined carbohydrates such as pasta and white rice.
- Eat plenty of whole grains such as brown rice and bulgur wheat.
- Eat lean protein sources such as chicken; cut back on red meat and full-fat dairy foods.
- Avoid refined foods and processed foods.
- Spice it up. Ginger, curry, and other spices can have an anti-inflammatory effect.

As one example of a day's worth of anti-inflammatory eating, Cannon suggests a breakfast of toasted steel-cut oatmeal with berries, yogurt, or other topping and coffee or green tea. Lunch could be tuna salad on 7-grain bread and a smoothie with seasonal fruits. For a snack, try an ounce of dark chocolate and about four walnuts. Dinner could be spaghetti with turkey meat sauce, spinach salad with oranges and walnuts, and apple cranberry pie made without butter.

The diets don't promise weight loss, but weight reduction does often occur. And that makes sense, given the makeup of the diet, says Greenfield.

"When you are talking about cutting back on red meat, dairy, fats and trans fats, partially hydrogenated oils, highly processed carbs -- and eating healthier protein like fish, eating more fruits and vegetables -- odds are that people are going to lose at least a little bit of weight."

## **Where Is the Proof That Reducing Inflammation Works?**

Can a diet really affect inflammation?

Proponents say it can, but they acknowledge that the anti-inflammatory diet needs to be studied more extensively to prove that it actually reduces disease such as heart problems.

"But a related diet, the Mediterranean diet, has been and is associated with improved cardiac outcomes," Cannon says.

Greenfield agrees. "There is ample evidence [of disease risk reduction] on the Asian-style diet and the Mediterranean-style diet," he says. "When you take a look at the components [of those diets], they could easily be called anti-inflammatory diets."

And eating a diet high in omega-6 and low in omega-3 is associated with increasing levels of cytokines -- proteins released from cells that trigger inflammation -- according to a study published in *Psychosomatic Medicine*.

Omega-3, in doses of 3 grams or more per day, has been found effective for those with **rheumatoid arthritis**, reducing morning stiffness and the number of joints that are tender or swollen, according to a review of the research on omega-3 fatty acids and health in *American Family Physician*.

Anecdotally, says Greenfield, he hears from patients that avoiding "inflammatory" foods can **help their osteoarthritis pain**. He recalls talking to patients with arthritis who have vacationed in India, for instance, eating dishes with plenty of curry, and telling him their joints didn't hurt as much while they were there.

**Curry**, he says, as well as **ginger**, is a natural anti-inflammatory.

Not surprisingly, the anti-inflammatory diet takes longer to work than, say, an anti-inflammatory medicine. "With an anti-inflammatory drug, you feel better in an hour or two," Greenfield says. For the anti-inflammatory diet, more patience is needed. "I would say clearly within just a few weeks most of the patients I have see a noticeable difference [in symptoms]."

### **Anti-Inflammatory Diets: More Opinions**

It's not surprising that anti-inflammatory diets have gotten popular, says Elisa Zied, RD, a spokeswoman for the American Dietetic Association and a dietitian in New York City.

While they may have some merit, she cautions: "Individual foods should not be the focus. You need to pay attention to your overall pattern." And reducing inflammation is not just about what you eat, she says.

"Maintaining a healthy body weight is the best thing you can do to reduce inflammation," Zied says.

Patience White, MD, the chief public health officer for the Arthritis Foundation, agrees, particularly when it comes to patients with arthritis. "The link between weight and osteoarthritis in the lower extremities is very close," she says. "The heavier you are, the more likely you are to get arthritis."

What about the anti-inflammatory diet for arthritis symptoms? "We don't have enough data one way or the other to prove following that diet helps your arthritis," White says.

Until more research is in, she suggests eating a balanced diet, getting enough sleep and exercise, maintaining a healthy weight, and being supervised by a doctor.

Source: <http://www.webmd.com/food-recipes/features/anti-inflammatory-diet-road-to-good-health>

**Anti-Inflammatory Foods** (IF = Inflammation Factor; Higher positive numbers indicate greater anti-inflammatory properties, negative numbers (not detailed here) indicate inflammatory properties). Please note that many "inflammatory" foods are wonderful for you for many other reasons, so a balanced diet is key. As such, when including "inflammatory" foods in your diet, you may want to consider balancing this with additional "anti-inflammatory" foods such as those listed below.

1. Wild Alaskan Salmon: High in omega-3's reported to have anti-inflammatory properties (wild is preferred over farmed or organic farmed). It is recommended to incorporate oily fish into your diet multiple times per week. If you don't like fish, consider a high quality fish oil supplement. Fish oil IF = 1944, Wild Atlantic Salmon Baked IF = 489; Wild Atlantic Salmon Raw IF = 383
2. Turmeric: Natural anti-inflammatory spice, curcumin, often found in curry blends. This spice is also available in its pure form in pill format for those looking to add even more to their diet for the beneficial anti-inflammatory properties. Often recommended for those with arthritis and other joint pain, Turmeric is not only an anti-inflammatory, but also is believed to be a pain reliever. For more information or to purchase visit [http://www.naturalhealthcarestore.com/turmeric\\_buy.htm](http://www.naturalhealthcarestore.com/turmeric_buy.htm) IF = 338
3. Cayenne Pepper: All chili peppers, including cayenne, contain a high level of capsaicin, which in addition to giving cayenne the "heat" it is known for, is a potent inhibitor of substance P, a neuropeptide associated with the inflammatory processes. The hotter the chili pepper, the more capsaicin it contains. Cayenne is one of the hottest varieties of pepper. Capsaicin continues to be studied as an effective treatment for sensory nerve fiber disorders, including pain associated with arthritis, psoriasis, and diabetic neuropathy. For more information or to purchase visit <http://www.naturalhealthcarestore.com/cayenne.htm> IF = 254
4. Ginger: In addition to its anti-inflammatory benefits, ginger is used to treat "stomach problems," including motion sickness, morning sickness, colic, upset stomach, gas, diarrhea, nausea caused by cancer treatment, nausea and vomiting after surgery, and loss of appetite. It is also used for pain relief from arthritis, muscle soreness, menstrual pain, upper respiratory tract infections, cough, and bronchitis. Ginger is also used for chest pain, low back pain, and stomach pain. Ginger root (raw) IF = 387; Ginger Root (ground) IF = 248  
Source: <http://www.webmd.com/vitamins-supplements/ingredientmono-961-GINGER.aspx?activeIngredientId=961&activeIngredientName=GINGER>
5. Garlic: Garlic can help reduce inflammation, regulate glucose and help your body fight infection. Garlic is beneficial both raw and powdered. It is best to create your own garlic powder by slicing raw garlic, drying in a pan in the oven at 108 degrees or lower (or air drying out of the direct sun light), grinding the dried slices in a blender or food processor, and straining to remove any remaining chunks. Garlic (raw) IF = 215; Garlic (powdered) IF = 468
6. Sweet Potato: A great source of complex carbs, fiber, beta-carotene, manganese and vitamin B6 and C. Sweet Potato (baked) IF = 189, Sweet Potato (raw) IF = 76 (Note that regular potatoes are inflammatory)
7. Kelp: Brown algae high in fiber which helps fight liver and lung cancer, reduces inflammation, and is an anti-oxidant. Raw Kelp IF = 7
8. Extra Virgin Olive Oil: A staple in the Mediterranean diet, considered one of the fundamental anti-inflammatory diets. Olive oil provides fats that fights inflammation, (high in good cholesterol which actually helps to reduce bad cholesterol). Believed to lower the risk of asthma, arthritis, heart disease. IF = 74
9. Cruciferous Vegetables: High in antioxidants, naturally detoxifying.

- a. Kale (cooked) IF = 112; Kale (raw) IF = 213; Kale (frozen) IF = 0
  - b. Broccoli (cooked) IF = 60; Broccoli (raw) IF = 26; Broccoli (frozen) IF = 39
  - c. Brussel Sprouts (cooked) IF = 40; Brussel Sprouts (raw) IF = 30
  - d. Cauliflower (cooked) IF = 9; Cauliflower (frozen) IF = 13; Cauliflower (raw) IF = 9
10. Collard Greens (cooked) IF = 159; Collard Greens (frozen) IF = 45; Collard Greens (raw) IF = 62
  11. Fish: Grouper (raw) IF = 85, Grouper (baked) IF = 85; Tuna (bluefin baked) IF = 593, Tuna (bluefin raw) IF = 464; Salmon (fish oil) IF = 1944, Wild Atlantic Salmon (baked) IF = 489, Wild Atlantic Salmon (raw) IF = 383; Swordfish (baked) IF = 349, Swordfish (raw) IF = 293; Sablefish (also known as black or blue cod) (baked) IF = 681, Sablefish (raw) IF = 532
  12. Almonds (raw) IF = 64; Almonds (blanched) IF = 71; Almonds (dry-roasted) IF = 66; Almonds (honey-roasted) IF = 71; Almonds (oil-roasted) IF = 77
  13. Avocado: Avocado has been shown to help with cardiovascular disease, weight management, diabetes, and help the body to better absorb nutrients. Avocado are high in fiber, potassium (twice that of bananas), vitamin E, B-vitamins, and folic acid. Avocado (fresh) IF = 57
  14. Flaxseed IF = 39
  15. Spinach (raw) IF = 74, Spinach (cooked) IF = 224; Turnip Greens (raw) IF = 134, Turnip Greens (cooked) IF = 238; Beet Greens (raw) IF = 63, Beet Greens (cooked) IF = 136; Lettuce (romaine) IF = 69; Lettuce (bibb) IF = 36; Lettuce (green leaf) IF = 42; Lettuce (red leaf) IF = 34; Lettuce (iceburg) IF = 6
  16. Carrot (raw) IF = 98, Carrot (cooked) IF = 130
  17. Fruit: Note that most fruits are lower in their IF rating, likely due to the high content of natural sugar and high ranking on the glycemic index, however, there are many other benefits to eating fruits. Therefore, we once again suggest a balanced diet adding high IF rating fishes, vegetables, and leafy greens to counter the low IF and often negative IF ratings of many fruits. Kiwi (fresh) IF = 17; Grapefruit (red) IF = 9; Apple IF = -9, Asian Pear IF = -7; Grapes IF = -30
  18. Wine IF = -5, Red Wine Vinegar IF = 0, Balsamic Vinegar IF = -7

Source for IF rating:

- Website rating the "inflammation factor" or IF of various foods <http://inflammationfactor.com>. The creator of this system, Monica Reinagel, MS, LN, CNS is a licensed nutritionist and professionally-trained chef. She holds a Master's of Science in Human Nutrition, is a board-certified nutrition specialist, a member of the American Dietetic Association, the American College of Nutrition, the Association of Health Care Journalists, and the International Association of Culinary Professionals. Monica studied systemic inflammation for many years compiling data from hundreds of research studies. Her system considers the inflammatory and anti-inflammatory effects of over 20 major nutrients and has been called "the most sophisticated approach to date for predicting the inflammatory effects of foods." In 2006, Monica published her book "The Inflammation Free Diet Plan" which details how to use this system in your daily diet. Additionally, her website <http://inflammationfactor.com/look-up-if-ratings/> provides an easy way to look up the IF ratings on over 2,000 foods common to many people's diets. The formula used to calculate the IF Rating includes more than 20 different factors that affect a food's

inflammatory or anti-inflammatory potential, including: (i) amount and type of fat, (ii) essential fatty acids, (iii) vitamins, minerals and antioxidants, (iv) glycemic index, and (v) anti-inflammatory compounds.

#### Other Sources of Information:

- PDF Handout from the University of Wisconsin Integrative Medicine (2 Page Overview)- [http://www.fammed.wisc.edu/sites/default/files/webfm-uploads/documents/outreach/im/handout\\_ai\\_diet\\_patient.pdf](http://www.fammed.wisc.edu/sites/default/files/webfm-uploads/documents/outreach/im/handout_ai_diet_patient.pdf)
- Doctor Hand out [http://www.sjogrens.org/files/brochures/anti-inflammatory\\_diet.pdf](http://www.sjogrens.org/files/brochures/anti-inflammatory_diet.pdf)
- Anti-Inflammatory Food Pyramid <http://www.drweil.com/drw/u/ART02995/Dr-Weil-Anti-Inflammatory-Food-Pyramid.html>
- 7 Healthy Foods that MAY Cause Inflammation - <http://www.globalhealingcenter.com/natural-health/7-healthy-foods-that-cause-inflammation/>
- Tart Cherries which have long been recommended for those with arthritis shown to have "the Highest Anti-Inflammatory Content of Any Food" according to new research from Oregon Health & Science University presented today at the American College of Sports Medicine Conference (ACSM) <http://www.prnewswire.com/news-releases/researchers-say-tart-cherries-have-the-highest-anti-inflammatory-content-of-any-food-155672215.html>
- Website rating the "inflammation factor" or IF of various foods <http://inflammationfactor.com>. The creator of this system, Monica Reinagel, MS, LN, CNS is a licensed nutritionist and professionally-trained chef. She holds a Master's of Science in Human Nutrition, is a board-certified nutrition specialist, a member of the American Dietetic Association, the American College of Nutrition, the Association of Health Care Journalists, and the International Association of Culinary Professionals. Monica studied systemic inflammation for many years compiling data from hundreds of research studies. Her system considers the inflammatory and anti-inflammatory effects of over 20 major nutrients and has been called "the most sophisticated approach to date for predicting the inflammatory effects of foods." In 2006, Monica published her book "The Inflammation Free Diet Plan" which details how to use this system in your daily diet. Additionally, her website <http://inflammationfactor.com/look-up-if-ratings/> provides an easy way to look up the IF ratings on over 2,000 foods common to many people's diets.

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