Omega-3 Supplements

url: https://www.nccih.nih.gov/health/omega3-supplements-in-depth  
  
  
Omega-3 Supplements: In Depth  
What s the Bottom Line?  
How much do we know about omega-3 fatty acids (omega-3s)?  
Extensive research has been done on omega-3s, especially the types found in seafood (fish and shellfish) and fish oil supplements.  
  
What do we know about the effectiveness of omega-3 supplements?  
  
Research indicates that omega-3 supplements don t reduce the risk of heart disease. However, people who eat seafood one to four times a week are less likely to die of heart disease.  
High doses of omega-3s can reduce levels of triglycerides.  
Omega-3 supplements may help relieve symptoms of rheumatoid arthritis.  
Omega-3 supplements have not been convincingly shown to slow the progression of the eye disease age-related macular degeneration.  
For most other conditions for which omega-3 supplements have been studied, the evidence is inconclusive or doesn t indicate that omega-3s are beneficial.  
What do we know about the safety of omega-3 supplements?  
  
Omega-3s usually produce only mild side effects, if any.  
There s conflicting evidence on whether omega-3s might influence the risk of prostate cancer.  
If you re taking medicine that affects blood clotting or if you re allergic to fish or shellfish, consult your health care provider before taking omega-3 supplements.  
What Are Omega-3s?  
Omega-3s (short for omega-3 fatty acids) are a kind of fat found in foods and in the human body. They are also sold as dietary supplements.  
  
Types of Omega-3s and Foods That Contain Them  
The omega-3s EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid) are found in seafood (fish and shellfish).  
Because of their chemical structure, EPA and DHA are sometimes referred to as long-chain omega-3s.  
A different type of omega-3, ALA (alpha-linolenic acid), is found in certain plant oils such as flaxseed, soybean, and canola oils and also in some other foods of plant origin, such as chia seeds and black walnuts.  
Most of the research discussed in this fact sheet focuses on EPA and DHA.  
Supplements That Contain Omega-3s  
Several types of dietary supplements contain omega-3s.  
  
Fish oil supplements contain EPA and DHA.  
Fish liver oil supplements, such as cod liver oil, contain EPA and DHA, and they also contain vitamins A and D, in amounts that vary from product to product. Vitamins A and D can be harmful in excessive amounts.  
Krill oil contains EPA and DHA.  
Algal oils are a vegetarian source of DHA; some also contain EPA.  
Flaxseed oil contains ALA.  
Seafood vs. Supplements  
For some health conditions, the evidence for benefits from seafood (fish and shellfish) is stronger than the evidence for omega-3 supplements.  
How could this happen? Here are some possibilities:  
Seafood may provide enough omega-3s; more may not be better.  
Other nutrients in seafood besides omega-3s may play a role in its benefits.  
Some of the benefits of seafood may result from people eating it in place of less healthful foods.  
There s evidence that people who eat seafood have generally healthier lifestyles.  
The Federal Government s Dietary Guidelines for Americans 2015 2020 recommends that adults eat 8 or more ounces of a variety of seafood (fish or shellfish) per week for the total package of nutrients seafood provides, and that some seafood choices with higher amounts of EPA and DHA be included. Smaller amounts of seafood are recommended for young children.  
  
Use of Omega-3 Supplements in the United States  
According to the 2012 National Health Interview Survey, which included a comprehensive survey on the use of complementary health approaches in the United States, fish oil supplements are the nonvitamin/nonmineral natural product most commonly taken by both adults and children. The survey findings indicated that about 7.8 percent of adults (18.8 million) and 1.1 percent of children age 4 to 17 (664,000) had taken a fish oil supplement in the previous 30 days.  
  
What Do We Know About the Effectiveness of Omega-3s?  
Conditions Affecting the Circulatory System  
Heart Disease  
A 2011 evaluation of 17 studies indicated that people who eat seafood (fish and shellfish) one to four times a week are less likely to die of heart disease than those who rarely or never eat seafood.  
A 2018 analysis of 10 major omega-3 supplementation studies (77,917 total participants, all at high risk of heart disease), each of which involved at least 500 participants and a treatment duration of at least a year, found no evidence that omega-3s could reduce the risk of fatal or nonfatal coronary heart disease.  
In 2016, the U.S. Government s Agency for Healthcare Research and Quality (AHRQ) did a comprehensive evaluation of 98 studies of omega-3s and heart disease, including both diet and supplementation studies. They did not find evidence that omega-3s can reduce the risk of heart attacks or death from heart disease.  
Several other analyses of the evidence have been done in the last few years (2012 or later), and like the 2018 analysis and the AHRQ report, most found little or no evidence for a protective effect of omega-3 supplements against heart disease. However, some earlier analyses suggested that omega-3s could be helpful. The difference between the newer conclusions and the older ones may reflect two changes over time:  
Public health messages that urge people to eat more seafood may have led to greater consumption of omega-3s from food. Additional omega-3s, beyond the amounts consumed by people who eat seafood, may not have extra benefits.  
More people are taking medicines that reduce the risk of heart attacks, such as statin drugs to treat high cholesterol. Omega-3s may not offer extra benefits beyond those of modern drug treatment.  
For more information on heart disease, see NCCIH s webpage on cardiovascular disease.  
Stroke  
Eating seafood (fish and shellfish) has been linked to a moderate reduction in the risk of stroke.  
According to the AHRQ report, there is some evidence that omega-3s from marine sources (such as fish oil) may reduce the risk of one type of stroke (ischemic stroke the type caused by narrowing or blockage of a blood vessel in the brain), but omega-3s have not been shown to reduce total strokes or death from stroke.  
Triglycerides  
Triglycerides are a type of fat found in people s blood. Excessive levels of triglycerides may raise the risk of heart disease. Dietary changes, weight control, and exercise are used to lower triglyceride levels. Some people also need to take medicine to lower their triglyceride levels.  
High doses of omega-3 fatty acids can reduce triglyceride levels.  
Several products containing omega-3s have been approved as prescription drugs to be used in combination with diet to reduce triglyceride levels in patients whose triglyceride levels are very high.  
The composition of these products is not the same as that of typical omega-3 supplements, and the testing and regulation of prescription drugs differ from those for dietary supplements. Therefore, the effects of these prescription products may not be the same as those of omega-3 dietary supplements.  
Conditions Affecting the Brain, Nervous System, or Mental Health  
Depression  
It s uncertain whether omega-3 fatty acid supplements are helpful for depression. Although some studies have had promising results, a 2015 evaluation of 26 studies that included more than 1,400 people concluded that if there is an effect, it may be too small to be meaningful. Other analyses have suggested that if omega-3s do have an effect, EPA may be more beneficial than DHA and that omega-3s may best be used in addition to antidepressant medication rather than in place of it.  
Omega-3s have not been shown to relieve symptoms of depression that occur during pregnancy or after childbirth.  
Depression can be a serious illness. If you or someone in your family may have depression, consult a health care provider.  
For more information, see NCCIH s webpage on depression.  
Attention-Deficit Hyperactivity Disorder (ADHD)  
Research on omega-3s for ADHD has had conflicting results. It s uncertain whether omega-3s have any benefit for symptoms of this condition.  
For more information, see NCCIH s webpage on ADHD.  
Alzheimer s Disease/Cognitive Impairment  
Some research indicates that people who eat more seafood may have a reduced risk of cognitive decline. However, omega-3 supplements haven t been shown to help prevent cognitive impairment or Alzheimer s disease or to improve symptoms of these conditions. For example, a large NIH-sponsored study completed in 2015 indicated that taking EPA and DHA supplements did not slow cognitive decline in older adults. The people studied were participants in a larger eye disease study, and all of them had age-related macular degeneration (AMD).  
It s possible that omega-3s might have different effects in people with different genetic backgrounds. A 2017 research review suggested that people who carry a gene called APOE4, which is associated with an increased risk of Alzheimer s disease, might benefit from taking DHA before developing signs of Alzheimer s.  
For more information, see NCCIH s webpage on cognitive function, dementia, and Alzheimer s disease.  
Other Conditions Affecting the Brain, Nervous System, or Mental Health  
Omega-3s have also been studied for autism spectrum disorders, borderline personality disorder, multiple sclerosis, and schizophrenia, but the evidence regarding their effects on these conditions is inconclusive.  
  
Eye Diseases  
Age-Related Macular Degeneration  
Age-related macular degeneration (AMD) is an eye disease that can cause vision loss in older people. Two major National Institutes of Health (NIH)-sponsored studies, called Age-Related Eye Disease Study (AREDS) and Age-Related Eye Disease Study 2 (AREDS2), showed that dietary supplements containing specific combinations of vitamins, antioxidants, and zinc helped slow the progression of AMD in people who were at high risk of developing the advanced stage of this disease. AREDS2, which had more than 4,000 participants and was completed in 2013, also tested EPA and DHA. The results showed that adding these omega-3s to the supplement formulation didn t provide any additional benefits. Other, smaller studies of omega-3 supplements also haven t shown them to have a beneficial effect on the progression of AMD.  
For more information on AMD and the AREDS studies, see NCCIH s webpage on eye conditions.  
Dry Eye Disease  
The results of several small studies had suggested that taking omega-3 supplements might help relieve symptoms of dry eye disease. However, a 2018 NIH-sponsored study that tested omega-3 supplements for a full year in a larger group (535 study participants) with moderate-to-severe dry eye disease found that the supplements were no more helpful than a placebo (an inactive substance).  
Retinitis Pigmentosa  
Only a few studies have been conducted on omega-3s for retinitis pigmentosa, and these studies have not shown any clear evidence of beneficial effects.  
Other Conditions  
Rheumatoid Arthritis  
The types of omega-3s found in seafood and fish oil may be modestly helpful in relieving symptoms of rheumatoid arthritis and decreasing patients need for nonsteroidal anti-inflammatory drugs.  
Conventional medical treatment for rheumatoid arthritis can slow joint damage. If you have rheumatoid arthritis, don t change your use of prescribed medications without consulting your health care provider.  
For more information, see NCCIH s fact sheet on rheumatoid arthritis.  
Infant Development  
The nutritional value of seafood is important during early development. The Dietary Guidelines for Americans 2015 2020 and guidance from the U.S. Food and Drug Administration and Environmental Protection Agency recommend that women who are pregnant or breastfeeding eat at least 8 ounces but no more than 12 ounces of a variety of seafood each week, from choices that are lower in methyl mercury. Methyl mercury can be harmful to the brain and nervous system if a person is exposed to too much of it.  
In 2016, AHRQ reviewed 143 studies that evaluated the effects of giving omega-3 supplements to pregnant or breastfeeding women or giving formulas with added DHA to infants. They found that when women took omega-3 supplements during pregnancy, their babies birth weight was slightly higher, but the risk of an undesirably low birth weight did not change. Also, when women took omega-3 supplements during pregnancy, their pregnancies lasted a little longer, but there was no effect on the risk of premature birth. Omega-3s were not found to have effects on any other aspects of the mothers or infants health or the infants long-term development. Aspects of the infants health that were not shown to be affected by omega-3s include growth after birth, visual acuity, long-term neurological and cognitive development, and the risks of autism, ADHD, learning disorders, and allergies.  
In a study published after the AHRQ report, scientists in Denmark gave high-dose fish oil supplements or placebos to 736 pregnant women during the third trimester of pregnancy. Children born to mothers who had taken fish oil were less likely to develop asthma or persistent wheezing in early childhood, and this was most noticeable in children whose mothers had low blood levels of EPA and DHA before they started to take the supplements. However, other studies that evaluated the effects of omega-3 supplementation during pregnancy on childhood asthma risk have had inconsistent results.  
Miscellaneous Conditions  
Omega-3s have been studied for other conditions, with either inconclusive or negative results. These conditions include allergies, atopic eczema (an allergic skin condition), cystic fibrosis, diabetes, inflammatory bowel diseases (Crohn s disease or ulcerative colitis), intermittent claudication (a circulatory problem), nonalcoholic fatty liver disease, and osteoporosis.  
What Do We Know About the Safety of Omega-3s?  
Side effects of omega-3 supplements are usually mild. They include unpleasant taste, bad breath, bad-smelling sweat, headache, and gastrointestinal symptoms such as heartburn, nausea, and diarrhea.  
Several large studies have linked higher blood levels of long-chain omega-3s with higher risks of prostate cancer. However, other research has shown that men who frequently eat seafood have lower prostate cancer death rates and that dietary intakes of long-chain omega-3s aren t associated with prostate cancer risk. The reason for these apparently conflicting findings is unclear.  
NCCIH-Funded Research  
NCCIH is supporting research on omega-3s.  
  
More Information  
Currently, topics that NCCIH-funded researchers are investigating include:  
How changes in the intake of omega-3s and other fatty acids affect patients with migraine  
Which patients with depression might respond to EPA  
How genetic differences affect the fate of omega-3s in the body  
The effects of flaxseed, which is rich in ALA, in an animal model of ovarian cancer.  
More To Consider  
Take charge of your health talk with your health care providers about any complementary health approaches you use. Together, you can make shared, well-informed decisions.  
  
For More Information  
NCCIH Clearinghouse  
The NCCIH Clearinghouse provides information on NCCIH and complementary and integrative health approaches, including publications and searches of Federal databases of scientific and medical literature. The Clearinghouse does not provide medical advice, treatment recommendations, or referrals to practitioners.  
  
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Website: https://www.nccih.nih.gov  
  
Email: info@nccih.nih.gov(link sends email)  
  
Office of Dietary Supplements (ODS), National Institutes of Health (NIH)  
ODS seeks to strengthen knowledge and understanding of dietary supplements by evaluating scientific information, supporting research, sharing research results, and educating the public. Its resources include publications (such as Dietary Supplements: What You Need To Know) and fact sheets on a variety of specific supplement ingredients and products (such as vitamin D and multivitamin/mineral supplements).  
  
Information on omega-3 fatty acids  
  
Website: https://ods.od.nih.gov  
  
Email: ods@nih.gov(link sends email)  
  
Know the Science  
NCCIH and the National Institutes of Health (NIH) provide tools to help you understand the basics and terminology of scientific research so you can make well-informed decisions about your health. Know the Science features a variety of materials, including interactive modules, quizzes, and videos, as well as links to informative content from Federal resources designed to help consumers make sense of health information.  
  
Explaining How Research Works (NIH)  
  
Know the Science: How To Make Sense of a Scientific Journal Article  
  
Understanding Clinical Studies (NIH)  
  
PubMed   
A service of the National Library of Medicine, PubMed contains publication information and (in most cases) brief summaries of articles from scientific and medical journals. For guidance from NCCIH on using PubMed, see How To Find Information About Complementary Health Approaches on PubMed.  
  
Website: https://pubmed.ncbi.nlm.nih.gov/  
  
NIH Clinical Research Trials and You  
The National Institutes of Health (NIH) has created a website, NIH Clinical Research Trials and You, to help people learn about clinical trials, why they matter, and how to participate. The site includes questions and answers about clinical trials, guidance on how to find clinical trials through ClinicalTrials.gov and other resources, and stories about the personal experiences of clinical trial participants. Clinical trials are necessary to find better ways to prevent, diagnose, and treat diseases.  
  
Website: https://www.nih.gov/health-information/nih-clinical-research-trials-you  
  
Research Portfolio Online Reporting Tools Expenditures & Results (RePORTER)  
RePORTER is a database of information on federally funded scientific and medical research projects being conducted at research institutions.  
  
Website: https://reporter.nih.gov  
  
MedlinePlus  
To provide resources that help answer health questions, MedlinePlus (a service of the National Library of Medicine) brings together authoritative information from the National Institutes of Health as well as other Government agencies and health-related organizations.  
  
Information on dietary fats (including omega-3s)  
  
Website: https://www.medlineplus.gov  
  
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