HSIS
Omega-3 – evidence reviewed
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Fish oils are being upheld in the media as protective agents against a wide range of diseases with benefits ranging across all our body systems. Scientific evidence is driving this promotion - but how valid is it?

Introduction

We require two groups of essential fatty acids (EFAs) in our diet: the omega-3 and omega-6 families. The body requires both, but modern diets provide excessive amounts of omega-6 essential fatty acids, while intakes of omega-3 essential fatty acids are generally low. Evidence for the health protective effects of ensuring a correct balance of intakes of omega-6 and Omega 3 essential fatty acids is still emerging.

Significant levels of omega-6 essential fatty acids and omega-3 essential fatty acids are found in seed oils (e.g. sunflower oil) and in oily fish, respectively. The latter contain two essential fatty acids, EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid). A major role of EPA is to support the heart and artery health, while DHA is indispensable in the structure of cell membranes throughout the body, and particularly those of the brain and the retina of the eye.

Omega-3 and Inflammation

Although inflammation is necessary as part of the body's immune defences against microbial attack, it is becoming increasingly recognised as an important contributor to many chronic diseases, including cancer (1), heart disease (2) and diabetes (3). A key action of omega-3 essential fatty acids is to 'dampen down' the inflammatory response and maintain it within tolerable limits. Conversely, excessive intakes of omega-6 essential fatty acids can cause excessive inflammation, damaging body tissues. Hence, the maintenance of an appropriate inflammatory response is critical to disease prevention, and can be largely achieved by ensuring a healthy, balanced ratio of omega-6 and omega-3 essential fatty acids in all cells (4).

Balancing the Omega essential fatty acids

An improved essential fatty acid balance can be achieved by reducing omega-6 intake and increasing omega-3 intake. For example by replacing seed oils in the diet with olive oil (which has a low omega-6 content) and increasing intakes of omega-3 essential fatty acids by eating oily fish and/or taking fish oil supplements.

Most healthy people need 500-1000 mg of EPA+DHA daily for health maintenance, but those suffering from inflammatory conditions would benefit from at least 2,000 mg per day (4). Two portions of oily fish a week provide about 500 mg of EPA+DHA daily, which is regarded as adequate, but therapeutic levels can only be realistically achieved by dietary supplementation.

Health Conditions that benefit from Omega-3 Supplementation

Since omega-3 essential fatty acids are potent anti-inflammatory agents, they would be expected to be helpful for a wide range of inflammatory conditions (5). However, while there is substantial evidence of benefit of them for treatment of rheumatoid arthritis (6, 7), evidence is still under review for other inflammatory conditions, such as asthma and colitis.

Based on evidence of reduced heart disease risk, health agencies worldwide now recommend an increased intake of omega-3 essential fatty acids (8, 9, 10). For example, those with diabetes are at particular risk of heart disease, and have found benefit from omega-3 supplementation, which improves insulin action (11), aids weight loss [12], and reduces blood triglyceride levels [13].

Inflammation is also associated with several degenerative diseases of the brain, including Alzheimer's and Parkinson's (14). That the brain can be subject to inflammation is a relatively new concept, and animal studies suggest that other brain-related disorders, including depression, anxiety and ADHD may also involve inflammation, indicating potential benefit from omega-3 supplementation. Indeed, low blood levels of omega-3 essential fatty acids are found to occur with depression, and fish oil supplementation has been shown to have anti-depressant effects (15). Furthermore, although low omega-3 essential fatty acid status commonly occurs in attention-deficit/hyperactivity disorder (ADHD) with both adults (16) and children (17), a definitive clinical study of supplementation is still awaited. However, pilot studies of omega-3 essential fatty acids supplementation for children with learning difficulties have shown promising efficacy (18, 19), and further clinical research in this area is underway.

LAST WORD…

There is good evidence that omega-3 essential fatty acids can reduce risk of heart disease and inflammatory conditions such as rheumatoid arthritis. As a result, a sensible and safe strategy for the protection of general health and well-being is the need to maintain a healthful balance of dietary essential fatty acids, with foods, plus supplementation.

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