Article type: Opinion

Home Page URL: https://www.alliedacademies.org/journal-food-nutrition-health/

The role of omega-3 fatty acids in brain and heart health.

Yasuo Yu*

Department of Experimental Medicine, Sapienza University, Italy

***Correspondence to:** Yasuo Yu, Department of Experimental Medicine, Sapienza University, Italy. E-mail: yasuo.yu@uniroma1.it

Received: 1-Aug-2025, Manuscript No. aajfnh-25-167956; **Editor assigned:** 3-Aug -2025, PreQC No. aajfnh-25-167956 (PQ); **Reviewed:** 17-Aug-2025, QC No. aajfnh-25-167956; **Revised:** 24-Aug-2025, Manuscript No. aajfnh-25-167956 (R); **Published:** 30-Aug-2025, DOI: 10.35841/aajfnh-8.3.271

Introduction

Omega-3 fatty acids have gained significant attention in recent years for their profound impact on overall health, particularly brain and heart function. These essential fats, which the body cannot produce on its own, must be obtained through diet or supplements. Research increasingly supports omega-3s as vital nutrients that help protect against cognitive decline, support mental health, and reduce the risk of cardiovascular disease [1].

Omega-3 fatty acids primarily come in three forms: ALA (alpha-linolenic acid), found in plant sources like flaxseeds and walnuts; and EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid), which are mainly found in fatty fish such as salmon, mackerel, and sardines. While ALA can be converted into EPA and DHA in the body, this conversion is inefficient, making direct consumption of EPA and DHA crucial for reaping the full benefits [2].

One of the most well-established benefits of omega-3 fatty acids is their positive effect on heart health. Omega-3s help reduce triglyceride levels, lower blood pressure, decrease inflammation, and prevent the formation of blood clots. These effects collectively reduce the risk of heart attacks, strokes, and other cardiovascular events, which remain leading causes of death worldwide [3].

The American Heart Association recommends eating fatty fish at least twice a week as part of a heart-healthy diet. For those who cannot consume fish regularly, omega-3 supplements such as fish oil or algal oil (a plant-based DHA source) may be a valuable alternative. However, it's always best to consult a healthcare professional before starting supplements [4].

Beyond heart health, omega-3 fatty acids play a crucial role in brain development and function. DHA, in particular, is a major structural component of the brain and retina. Adequate levels of DHA are essential during pregnancy and early childhood to support cognitive development and visual acuity [5].

In adults, omega-3s help maintain brain health by promoting neural plasticity—the brain's ability to adapt and form new connections. Several studies have linked higher omega-3 intake to a reduced risk of neurodegenerative diseases such as Alzheimer's and Parkinson's. Furthermore, omega-3s may improve memory, attention, and processing speed in both healthy individuals and those with cognitive impairments [6].

Mental health benefits of omega-3s have also been increasingly recognized. Research suggests that these fatty acids have anti-inflammatory properties that can help alleviate symptoms of depression and anxiety. Some clinical trials have found that omega-3 supplements, especially those rich in EPA, may be effective as adjunct therapies for mood disorders [7].

The anti-inflammatory effects of omega-3s contribute to their protective roles in both the heart and brain. Chronic inflammation is a common underlying factor in many diseases, including atherosclerosis and neuroinflammation, which can damage blood vessels and neurons. By reducing inflammation, omega-3s help preserve the function and integrity of these vital organs [8].

Despite their benefits, many people do not consume enough omega-3 fatty acids. Western diets tend to be high in omega-6 fatty acids—found in many vegetable oils and processed foods—which can promote inflammation when consumed in excess and imbalance the omega-3 to omega-6 ratio. Striving for a balanced ratio by increasing omega-3 intake and moderating omega-6 consumption is key [9].

Citation: Yu Y. The role of omega-3 fatty acids in brain and heart health. J Food Nutr Health. 2025;8(3):271.

Incorporating omega-3 rich foods into your diet can be simple. Fatty fish like salmon, sardines, and trout are excellent sources, but plant-based eaters can turn to flaxseeds, chia seeds, walnuts, and algae-based supplements. Cooking methods matter too—baking or grilling fish preserves omega-3 content better than frying [10].

Conclusion

In conclusion, omega-3 fatty acids are indispensable for maintaining brain and heart health. Their anti-inflammatory and structural roles help prevent chronic diseases, support mental well-being, and promote healthy aging. By consciously including omega-3 rich foods or supplements in your diet, you can harness these benefits and protect two of your most vital organs.

References

1. Rodgers GP, Collins FS. Precision nutrition—the answer to "what to eat to stay healthy". Jama. 2020;324(8):735-6.
2. Braveman P. What are health disparities and health equity? We need to be clear. Public Health Rep. 2014;129(1_suppl2):5-8.
3. Chini CC, Zeidler JD, Kashyap S, et al. Evolving concepts in NAD+ metabolism. Cell Metab. 2021;33(6):1076-87.
4. Voss C, Klein S, Glanz K, et al. Nutrition environment measures survey–vending: development, dissemination, and reliability. Health Promot Pract. 2012;13(4):425-30.
5. Caspi CE, Sorensen G, Subramanian SV, et al. The local food environment and diet: a systematic review. Health & place. 2012 Nov 1;18(5):1172-87.
6. Mozaffarian D, Rosenberg I, Uauy R. History of modern nutrition science—implications for current research, dietary guidelines, and food policy. Bmj. 2018;361.
7. Leaf A, Weber PC. A new era for science in nutrition. Am J Clin Nutr. 1987;45(5):1048-53.
8. Herrero M, Simó C, García?Cañas V, et al. Foodomics: MS?based strategies in modern food science and nutrition. Mass Spectrom Rev. 2012;31(1):49-69.
9. Adams KM, Kohlmeier M, Powell M, et al. Nutrition in medicine: Nutrition education for medical students and residents. Nutr Clin Pract. 2010;25(5):471-80.
10. Blumberg J, Heaney RP, Huncharek M, et al. Evidence-based criteria in the nutritional context. Nutr Rev. 2010;68(8):478-84.

Citation: Yu Y. The role of omega-3 fatty acids in brain and heart health. J Food Nutr Health. 2025;8(3):271.