

# How Eggs Have Become a Disaster

Analysis by [Dr. Joseph Mercola](#) ✓ Fact Checked

## STORY AT-A-GLANCE

- › Evidence demonstrates that hens allowed to forage for their food outdoors produce eggs higher in omega-3 fatty acids and vitamin D
- › There are health consequences for the dramatic shift in omega fats commonly consumed in the standard Western diet, including a rising number who experience inflammatory diseases such as heart disease, cancer and diabetes
- › Low levels of one form of omega-3 fat are linked to memory loss and Alzheimer's disease. Maintaining optimal levels may help reduce inflammation, optimize muscle building, improve mental health and protect your vision
- › It is impossible to know your omega-3 index without testing. Consider reducing your intake of processed foods and switching to foods that have a lower ratio of omega-6 to omega-3 fats, such as locally raised outdoor eggs
- › Small, cold-water fatty fish such as anchovies, sardines and mackerel are good sources of omega-3, as is wild-caught Alaskan salmon. Consider a krill oil supplement if you don't like fish, and steer clear of fish oil supplements that typically don't deliver sufficient antioxidant support

Omega-3 fats are essential polyunsaturated fatty acids (PUFAs). Your body uses these fats for a variety of functions, such as blood clotting, brain and eye health, digestion and muscle activity.<sup>1,2,3</sup>

Humans evolved on a diet of omega-6 to omega 3 fats in a ratio of close to 1-to-1.<sup>4</sup> However, in the past several decades, the ratio in the standard Western diet measured between 15-to-1 and 16.7-to-1 in 2006<sup>5</sup> and 10 years later measured at 20-to-1 or greater.<sup>6</sup> This shift began during the Industrial Revolution when people began eating foods rich in vegetable oils and cereal grains were fed to livestock, raising the levels of omega-6 fats in meat.<sup>7</sup>

Omega-3 fats can be broken down into three main categories – alpha linoleic acid (ALA), eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA).<sup>8</sup> ALA is a precursor to EPA and DHA, but it can only be converted in amounts less than 5%.<sup>9</sup> DHA and EPA are long-chain omega-3 fats.

You must get each form of omega-3 fat from foods or dietary supplements. ALA is plant-based and found mostly in flaxseed, walnuts, chia seeds and hemp seeds.<sup>10</sup> Bioavailable DHA and EPA are found in fish and other marine-based foods.<sup>11</sup>

There is mounting research that drives home the importance of animal-based **omega-3 fats for heart health**.<sup>12</sup> Deficiency can leave you vulnerable to chronic disease and may increase your risk of **poor outcomes in COVID-19**.

As I mentioned, the objective is to bring your ratio of omega-6 to omega-3 fatty acids as close to 1-to-1 as possible. Many foods have omega-3 fats, but the ratio of omega-6 to omega 3 is high, so foods other than marine-based fish cannot effectively raise your omega-3 levels.

## **Omega 3-to-6 Levels in Conventional Eggs Have Plummeted**

Farmers used to harvest their eggs from chickens that were free ranging and allowed to forage for their food. For the most part, consumers today have the option of buying four different types of eggs at the grocery store.<sup>13,14</sup> They are:

- **Conventional** – These eggs are produced by cage-raised or cage-free chickens that are grain-fed. Cage-free means the chickens are not in cages, but still are packed into a large room with little space.

- **Organic** — Hens that produce certified organic eggs receive organic feed and are not treated with hormones. The certification does not necessarily mean they are allowed to forage.
- **Pastured or free-range** — Hens have some access to the outdoors where they may also have access to their natural food such as plants and insects. The pasture-raised claim<sup>15</sup> can be made if there is just a small, bare dirt area, and the free-range claim<sup>16</sup> can be made if there is a door that the farm could at some point open. This designation does not indicate what the hens are fed.
- **Omega-3 enriched** — The hens are raised like conventional chickens and the feed is supplemented with an omega-3 source like flax seeds.

Analysis and comparison of fatty acid composition in conventionally raised and outdoor chickens allowed to forage for insects and plants is vastly different.<sup>17</sup> One study published by Cambridge University<sup>18</sup> analyzed the difference in the eggs of hens allowed to forage for insects and plants against those fed a commercial diet and kept in cages.

The researchers controlled for the differences in chicken breeds by using sister hens and splitting them into groups. The hens were fed over six weeks before the eggs were analyzed. The researchers split the hens allowed to forage into three groups where one group had access to alfalfa, the second to red-and-white clover and the third to a mix of cool-season grasses.

At the end of the study, they found the concentrations of fatty acids and vitamin A did not differ in the three pastured groups, but those that foraged on grass had 23% more vitamin E than those that foraged on clover.

When they compared the eggs from the caged hens against the pastured eggs they found the hens allowed to forage had “twice as much vitamin E and long-chain omega-3 fats, 2.5-fold more total omega-3 fatty acids, and less than half the ratio of omega-6:omega-3 fatty acids.”<sup>19</sup>

A later study<sup>20</sup> also demonstrated that hens allowed to forage outdoors laid eggs with vitamin D content that was up to four times higher than those who were kept indoors. They compared vitamin D content from the hens exposed to sunlight against free-range

eggs purchased at the supermarket and found those from the grocer had relatively low vitamin D content.

## Consequences of the Dramatic Shift in Omega Fats

Scientific evidence shows that there have been significant consequences as humans began to eat a diet rich in omega-6 fats and low in omega-3s. The majority of omega-6 fats used to come from nuts and seeds. However current intake comes from processed foods and oxidized vegetable oils.<sup>21</sup>

This imbalance in omega fats is one route to inflammatory disease, including heart disease, diabetes and cancer. One primary source of omega-6 fats in the American diet is soybean oil, which accounts for 60% of all vegetable oils found in processed foods, salad dressings, snacks and margarine.<sup>22</sup>

Researchers have linked diets high in soybean oil with **Type 2 diabetes** and **obesity**.<sup>23</sup> Both of these health conditions are associated with heart disease, impaired cognition, neuropathy and early death.

In recent years it has become increasingly clear that one of the most damaging components in the modern diet is processed vegetable oils, including soybean oil. The biological damage they cause may be even worse than that triggered by refined sugar and high-fructose corn syrup, researchers say.<sup>24</sup>

The reason is because the oils trigger mitochondrial dysfunction that drives disease processes and several studies<sup>25,26,27</sup> have provided scientific evidence of this. The good news is that replacing dangerous oils with healthy saturated fats can go a long way towards boosting your health and reducing your risk of chronic disease.

Unfortunately, many health authority authorities insist that omega-6 rich oils like soybean, corn and canola oil are healthier than saturated animal fats such as pasture-raised butter and lard. This myth has been a tough one to dismantle, despite the evidence against it. To learn more about how processed vegetable oils can harm your health see, "[The Case Against Processed Vegetable Oils.](#)"

# Many Benefits of Balancing Omega-3 and Omega-6 Ratio

There are significant benefits to balancing your omega-6 and omega-3 ratio. For example, research<sup>28</sup> published in 2018 confirmed omega-3 fat can reduce your risk of cardiovascular disease, coronary heart disease and all-cause mortality. Participants with an omega-3 index in the highest quintile had a total mortality 34% lower than those in the lowest quintile, and a 39% lower risk for cardiovascular disease.

As detailed in “[More Data Support Heart Healthy Benefits of Omega-3s](#),” research has found fish oil consumption lowered the risk of all-cause mortality by 13% and cardiovascular mortality by 16%.

DHA is crucial for your brain health. Without enough, your nerve cells become stiff and more prone to inflammation as omega-3 fats are substituted with omega-6. Nerve cells that are rigid and inflamed have lower levels of proper neurotransmission and cells become compromised.<sup>29</sup>

Low levels of DHA have been linked to memory loss and Alzheimer's disease,<sup>30</sup> and some studies suggest degenerative brain diseases may potentially be reversible with sufficient DHA.<sup>31,32</sup> Other health benefits include:

---

**Reducing inflammation** — This can be helpful for those suffering with rheumatoid arthritis by reducing stiffness and pain.<sup>33</sup> Women who suffer from menstrual pain may also experience milder symptoms.<sup>34,35</sup>

---

**Optimizing muscle building and bone strength** — Omega-3 fats help your body build healthy muscle mass, including people suffering from cancer who may experience cachexia.<sup>36</sup> Omega-3 fats can also help improve your bone strength by improving the utilization of calcium in your body. This may lead to a reduction in the development of osteoporosis.<sup>37,38</sup>

---

**Improving metabolic syndrome<sup>39</sup> and insulin resistance.<sup>40</sup>**

---

**Improving mental health and behavior** — Demonstrated benefits have been shown

for children with attention deficit hyperactivity disorder (ADHD), including reduced aggression, hyperactivity,<sup>41</sup> impulsivity,<sup>42</sup> oppositional behavior<sup>43</sup> and restlessness.<sup>44</sup> Omega-3 is associated with lowered risk for other neurological/cognitive dysfunction as well, including: memory loss, brain aging, learning disorders and ADHD,<sup>45</sup> autism and dyslexia.<sup>46</sup>

---

**Protecting your vision** — DHA is a major structural element in your eye and brain.<sup>47</sup> Low levels of DHA may increase your risk for age related macular degeneration.<sup>48</sup>

---

**Reducing your risk of kidney disease<sup>49</sup> and colon cancer.<sup>50</sup>**

---

## Importance of Omega-3 Testing

Like with most other biomarkers, it's impossible to know your **omega-3 fatty acid index** without testing. The omega-3 index provides the most accurate measurement in the body and should ideally be above 8%.<sup>51</sup> The test measures the amount of omega-3 in the red blood cells as a reflection of how much is found in the rest of the body.

Basically, the test measures the average of your intake based on the lifespan of a red blood cell over 120 days. This means it is not influenced by recent meals, but rather an average of the past months. Researchers have used it as an index to analyze data, including that of the Framingham study<sup>52</sup> and the Women's Health Initiative.<sup>53</sup>

Maintaining a level in the range that is associated with low risk can reduce your potential chance of heart disease. An index below 4% has a high risk of heart disease, those with an index from 4% to 8% have an intermediate risk and those with an index greater than 8% have the lowest risk for coronary heart disease.<sup>54</sup>

Another study<sup>55</sup> used randomized control trial results to assess the effects of supplementation on telomere length and oxidative stress. The data suggested that telomere length increases with a decreasing ratio of omega-6 to omega-3. The researchers concluded that even over a short time, a change in the ratio has an impact on cell aging, inflammation and oxidative stress.

## Safely Raise Your Omega-3 Intake

If you discover you need more omega-3 after getting tested, consider the different ways you can raise your level without adding toxins. Strategies include reducing or eliminating processed foods as they are high in omega-6 fats and switching to foods that have a lower ratio of omega-6 to omega-3 fats, such as locally raised, outdoor eggs. These are also great sources of omega-3:

- **Fish** – Small, cold-water fatty fish such as mackerel, anchovies and sardines are excellent sources that have a low risk of hazardous contamination. Wild-caught Alaskan salmon is also low in mercury and other environmental toxins.

Unfortunately, much of the fish supply is heavily polluted with industrial waste, so it is extremely important to be selective, choosing fish high in healthy fats and low in contaminants, such as those mentioned above.

- **Krill oil** – Krill oil is my preferred choice as a supplement because it has the indispensable animal-based DHA and EPA your body needs, and in a form that's less prone to oxidation.

With the help of phospholipids, the nutrients in krill oil are carried directly to your cell membranes where they are more readily absorbed. Additionally, they may cross your blood-brain barrier to reach important brain structures.

While the following sources may be tempting because they are readily available and cost less than the ones mentioned above, I strongly advise avoiding:

- **Farmed salmon** – It contains about half the omega-3 levels of wild salmon, is often given antibiotics to treat bacterial infections, and fed a genetically engineered diet of corn and soy products and feed that also may contain or be contaminated with pesticides and chicken feathers, poultry litter, genetically modified yeast, chicken fat and dyes.<sup>56</sup>
- **Large carnivorous fish** – Marlin, swordfish and **tuna** (including canned tuna), for example, tend to contain some of the highest concentrations of mercury,<sup>57</sup> a known

neurotoxin.<sup>58</sup>

- **Fish oil** – While fish oil may appear to be a convenient and relatively inexpensive way to increase your intake of omega-3 fats, it typically delivers insufficient antioxidant support. It is also highly **prone to oxidation**,<sup>59</sup> leading to the formation of harmful free radicals.

## Sources and References

---

- <sup>1, 8, 11</sup> National Institute of Health, Omega-3 Fatty Acid
- <sup>2</sup> Gen Pharmacol 1990;21(2):241-6
- <sup>3</sup> Case Rep Med. 2016;2016:3089303
- <sup>4, 5</sup> Biomedicine and Pharmacotherapy, 2006;60(9)
- <sup>6</sup> Nutrients, 2016; 8(3)
- <sup>7</sup> Chris Kresser, June 17, 2019
- <sup>9</sup> Current Opinion in Clinical Nutrition and Metabolic Care, 2002;5(2)
- <sup>10</sup> Medical News Today, January 20, 2020
- <sup>12</sup> Circulation, 2015;132:e350
- <sup>13, 16</sup> Eater, July 17, 2019
- <sup>14, 15</sup> Rootstock, June 13, 2019
- <sup>17</sup> Nutrients, 2016;8(3):128
- <sup>18, 19</sup> Cambridge University Press, January 12, 2010
- <sup>20</sup> Nutrition, 2014;30(4)
- <sup>21</sup> Today's Dietitian, April 2013
- <sup>22</sup> Science Daily, July 22, 2015
- <sup>23, 24</sup> Diabetes in Control, August 21, 2015
- <sup>25</sup> STAT April 19, 2017
- <sup>26</sup> BMJ 2016;353:i1246
- <sup>27</sup> The Lancet August 29, 2017; 390(10107): 2050
- <sup>28</sup> Journal of Clinical Lipidology 2018; 12(3):718
- <sup>29</sup> Biomolecular Therapeutics, 2012;20(2)
- <sup>30</sup> The Journal of Nutrition, 2010;140(4)
- <sup>31</sup> Alzheimer's and Dementia 2010 Nov;6(6):456-64
- <sup>32</sup> Nutritional Neuroscience 2008 Apr;11(2):75-83
- <sup>33</sup> Arthritis Foundation, Fish Oil
- <sup>34</sup> European Journal of Clinical Nutrition 1995;49(7):508
- <sup>35</sup> American Journal of Obstetrics and Gynecology 1996;17(4):1335
- <sup>36</sup> Cancer 2004; 101(2):370
- <sup>37</sup> Progress in Lipid Research, 1997; 36(2-3):131
- <sup>38</sup> Science Daily, May 11, 2010

- <sup>39</sup> Journal of Pediatrics, 2010; 157(3):395
- <sup>40</sup> Nutrients, 2018;10(3)
- <sup>41</sup> Lipids, 2003; 38(10):1007
- <sup>42</sup> Journal of Child Neurology 2012; 27(6):747-753
- <sup>43</sup> Acta Paediatrica 2010; 99(10):1540-1549
- <sup>44</sup> Nutrition 2012; 28(6):670-677
- <sup>45</sup> Nordic Journal of Psychiatry May 2, 2014
- <sup>46</sup> Alternative Medicine Review 2007 Sep;12(3):207
- <sup>47</sup> Pediatric Research, 1990; 27(1):89-97
- <sup>48</sup> Survey of Ophthalmology, 2014; 59(5): 532-539
- <sup>49</sup> Urological Research 2011 Feb;39(1):59-67
- <sup>50</sup> Lipids in Health and Disease 2008 Aug 29;7(1):30
- <sup>51, 54</sup> OmegaQuant, July 9, 2018
- <sup>52</sup> EurekaAlert! June 24, 2021
- <sup>53</sup> The American Journal of Clinical Nutrition, 2015;101(4)
- <sup>55</sup> Brain, Behavior and Immunology, 2013;28:16
- <sup>56</sup> Tampa Bay Times, March 21, 2018
- <sup>57</sup> Environmental Defense Fund, Mercury Alert
- <sup>58</sup> Environmental Protection Agency, Health Effects of Exposure to Mercury
- <sup>59</sup> Journal of Nutritional Science, 2015;4:e36