

Allergy and Nutrition

A central function of the immune system is to distinguish foreign molecules from the molecules that belong to tissues of the body. The immune system responds to foreign molecules by multiplying specialized white blood cells (lymphocytes) and by producing antibodies.

In allergy the immune response is excessive. The intensity of an immune response is modulated by prostaglandins hormones. We make two types of prostaglandins hormones. Type 1 increases immune response, type 2 reduces it. A useful immune response depends on the balance between the two types. We make prostaglandins from Essential Fatty Acids (EFAs) exclusively. There are two types of EFAs, the Omega-6 and the Omega-3 EFAs. We use the omega-6 EFAs to make the prostaglandins that increase immune response, and we make prostaglandins that reduce the immune response from omega-3 EFAs only. The omega-6 EFAs are abundant in our diet, while the omega-3 EFAs are very scarce. The omega-6 to omega-3 ratio in the American diet is about 12 to 1, in the Australian diet the omega-6 to omega-3 ratio is around 18 to 1, instead of an ideal 2 to 1. With ratios higher than 2 to 1, the immune system is overactive. With ratios around or higher than 10 to 1 the immune system runs with no brakes. *Hence, the proliferation of allergy in a population on an omega-3 EFA deprived diet.*

To correct the excessive omega-6 to omega-3 ratio in the diet, we should avoid omega-6 EFAs rich fats and oils and supplement the diet with omega-3 EFAs rich fats and oils. Omega-3 EFAs are available in flax seeds, in cold ocean fish (sardine, salmon, mackerel, and herring), and in fish oil supplements. Here we have to make a distinction between Alpha Linolenic Acid (ALA), Eicosapentaenoic acid (EPA) and Docosahexaenoic acid (DHA). ALA is a short chain omega-3 EFA found in flax seed, and in flax seed oil. EPA and DHA are long chain omega-3 EFAs. ALA has little biochemical function except to contribute to cell membrane fluidity, and to be the raw material to make EPA and DHA. The conversion of ALA into EPA and DHA is a slow process. In best conditions 5 to 7 percent of the ingested ALA is converted into longer chain omega-3 EFAs only. People that can not convert enough ALA need food and supplements containing EPA and DHA.

When correcting the diet to reduce autoimmunity, we have to take into account the life span of the lymphocytes the immune system has multiplied, the lymphocytes that attack foreign bodies and the lymphocytes that produce antibodies. Once the storage of EPA and DHA is replenished—it takes about 6 weeks, the omega-3 derived prostaglandins production halts the lymphocyte multiplication. However the lymphocytes produced previously are still available. The lifespan of lymphocytes is from six months to two years. Therefore six months is the period of time one has to consider for some improvement to become noticeable and two years for remission to occur.

Some food (offending food) contains molecules that stimulate the production of omega-6 derived prostaglandins. A high blood sugar level (hyperglycemia) also stimulates the production of omega-6 derived prostaglandins. People with allergy should avoid eating offending food and food that increase the blood sugar level, like refined sugar, and food with a high glycemic index. A list of immune system offending food, an informative text about hyperglycemia with food listed by its glycemic index, a list of food with its essential fatty acid content, and the text above are available in the website of the Longevity Institute at <<http://www.longevinst.org>> (Click on “downloads” in the left navigation strip)