

### The importance of Omega-6 (AA), Omega-3 (EPA and DHA), Resolvins and Protectins

Omega-6 (AA) and Omega-3 (EPA and DHA) are essential for the body because they are building blocks for hormones produced with very specific purposes. See description below.

To prevent, an over stimulation of pro-inflammatory hormones you need to bring the AA/EPA balance down below 3:1. This is one of two goals the BalanceOil will support.

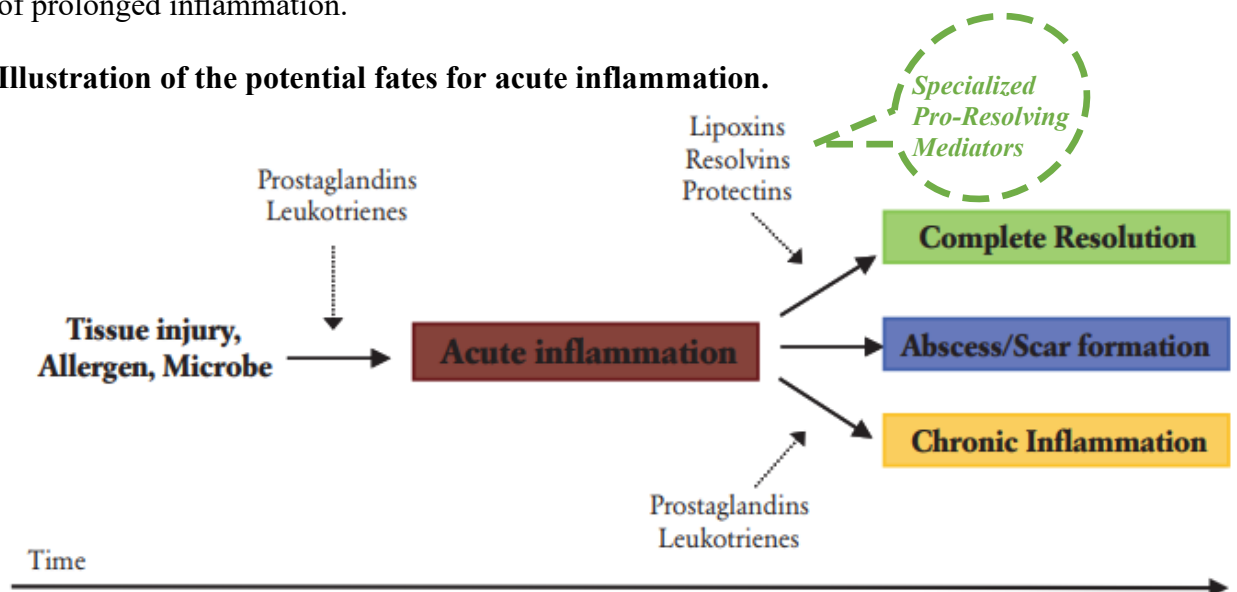
The second goal with the BalanceOil is to support the body with a sufficient level of Omega 3 to support the production of anti-inflammatory hormones such as Resolvins and Protectins. This is the natural self-defence against inflammation.

### SPMs: Specialized Pro-resolving Mediators

Resolution of inflammation has historically been viewed as a passive process, but recently has it been established that inflammation resolution is an active process with a distinct set of chemical mediators. Several clinical and epidemiological studies have identified beneficial effects of Omega 3 for a variety of inflammatory diseases.

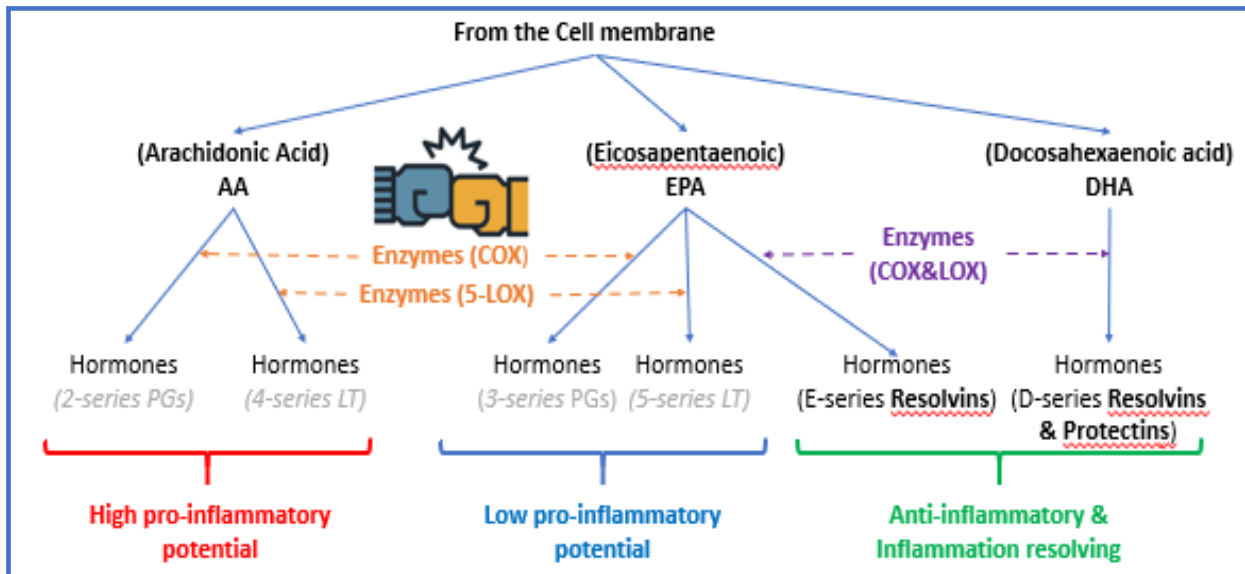
Resolvins and Protectins are recently identified molecules that are generated from Omega 3 precursors and can orchestrate the timely resolution of inflammation in model systems. Dysregulation of pro-resolving mediators is associated with diseases of prolonged inflammation.

### Illustration of the potential fates for acute inflammation.



Tissue injury activates the release and formation of arachidonate-derived prostaglandins and leukotrienes (Pro-inflammatory hormones), which regulate early events in the inflammatory response, such as change in blood flow, oedema and leukocyte recruitment. Specialized counter-regulatory lipid mediators, such as lipoxins, resolvins and protectins (anti-inflammatory), are generated at a later time and act in a tissue-specific manner to initiate the resolution of inflammation.

### The link between the BalanceTest and SPMs (Specialized Pro-resolving Mediators)



			Omega 6 (Arachidonic Acids)	Omega 3	Omega 3	Omega 6:3 Balance	Cell Membrane Fluidity	Protection Against inflammation
	Date	Test ID	(AA)	EPA	DHA	AA/ EPA	Saturated /(EPA+ DHA)	
<b>Target Value</b>			<b>8.21%</b>	<b>4.13%</b>	<b>4.78%</b>	<b>3:1 – 1:1</b>	<b>4:1</b>	<b>+90%</b>
Rune Test 1	Feb 1, 20	A9G1XYRS1	7.6%	0.56%	1.96%	13.6:1	15.0:1	0%
Rune Test 2	Jun 1, 20	D7S7FMRS1	8.5%	2.88%	3.78%	3.0:1	5.8:1	74%
Rune Test 3	Sep 1, 20	D5IV8JRS1	10.3%	3.12%	4.60%	3.3:1	4.8:1	81%

**AA fatty acid** is the building block for pro-inflammatory hormones. The inflammatory hormones are important for signaling the Immune system to deal with inflammation and diseases. In case you have an Omega-6:3 (AA/EPS) balance above 3:1, you have too much AA that will overstimulate the production of pro-inflammatory hormones. That will result in an ongoing inflammation that can turn into chronic inflammation and auto-immune diseases.

The **EPA** is important for 2 reasons. First, EPA is using the same enzymes as AA and with a sufficient level of EPA there will be less enzymes available for production of pro-inflammatory hormones. The EPA will, in a way, choke out the production of

pro-inflammatory hormones. Second, EPA is a building block for the anti-inflammatory hormones Resolvins.

The **DHA** fatty acids is also building block for anti-inflammatory and resolving hormones and in addition to the Resolvins hormones DHA also support the production of Protectins that is equally important for anti-inflammatory process.

**Conclusion:**

To support the body's defense against Acute inflammation you need to consume enough Omega-3 to support the production of anti-inflammatory hormones Resolvins and Protectins. The first step is to bring the Omega-6:3 in balance down to or below 3:1.

EPA will use the same enzymes as AA and choke out the production of Pro-inflammatory hormones, Prostaglandins and Leukotrienes. Omega-3 (EPA and DHA) are also essential compounds, to support the production of anti-inflammatory hormones Resolvins and Protectins.

In other words, support the body's self-defence against inflammation.

**Zinzino's BalanceOil will bring you in balance in 120 days**

How is the BalanceOil different:

Zinzino's BalanceOil is a mix of Omega 3 and Omega 9 (Extra virgin olive oil)

<b>Omega-6: Arachidonic acid (AA)</b>	<b>Omega-3: EPA, DHA and Resolvins</b>
<p>Various pathways using arachidonic acid (AA) as the initial substrate are composed of dioxygenases that carry out a complex reaction involving abstraction of selected hydrogens and insertion of molecular oxygen.</p> <p>Two major classes of enzymes, cyclooxygenases (COX) and lipoxygenases (LOX), are recognized for their prominent role in generating a number of important biological mediators. Among these, prostaglandins (PGs) and leukotrienes (LTs) are widely studied given their recognized role in human disease conditions as well as physiological and/or pathophysiological activities.</p> <p>Of these biological actions, one of the most significant is the major role played by eicosanoids in inflammation, where they contribute to all of the clinical symptoms associated with the inflammatory condition</p> <ul style="list-style-type: none"> <li>- namely,</li> <li>- pain,</li> <li>- redness, and</li> <li>- swelling.</li> </ul> <p>The ever-growing number of molecules derived from AA includes other families such as lipoxins (LXs), hepoxilins, hepoxides, monohydroxyeicosatetraenoic acids (HETEs), dihydroxyeicosatetraenoic acids, and their hydroperoxy precursors.</p>	<p>Eicosapentaenoic (EPA) acid and docosahexaenoic acid (DHA) - are precursors to potent bioactive mediators that possess both anti-inflammatory and protective properties. These mediators are coined Resolvins, Docosatrienes, and Protectins as general classes. Recently, new families of local-acting mediators were discovered that are biosynthesized from the essential fatty acids Eicosapentaenoic acid and Docosahexaenoic acid.</p> <p><b>These new chemical mediators are endogenously generated in inflammatory exudates collected during the resolution phase and are termed Resolvins and Protectins because specific members of these families control the magnitude and duration of inflammation in animals. Resolvins and Protectins remove chemokines ferried from the tissue by apoptotic neutrophils and T cells during resolution.</b></p> <p>Omega-3 polyunsaturated fatty acids (n-3 PUFAs) have long been associated with decreased inflammation and are also implicated in the prevention of tumorigenesis. Conventional thinking attributed this mainly to a suppressive effect of these fatty acids on the formation of arachidonic acid-derived prostaglandins and leukotrienes. Recent years have seen the discovery of a new class of inflammation-dampening and resolution-promoting n-3 PUFA-derived lipid mediators called Resolvins and Protectins. Chemically, these compounds are hydroxylated derivatives of the parent n-3 PUFA Eicosapentaenoic acid (EPA) for the E-Resolvins, and Docosahexaenoic acid (DHA) for the D-Resolvins and Protectin D1</p>