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OMEGA 3 FATTY ACID REPORT

Accession Number: 24529

Provider:

Dr. B. Koehl
123 Hiphop Avenue
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Client:

Jay Lo
123 Marley Avenue
Toronto, ON

Age:

34

DOB:

1971/5/13

Gender:

Male

Health #: N/A

Phone:

Fax:

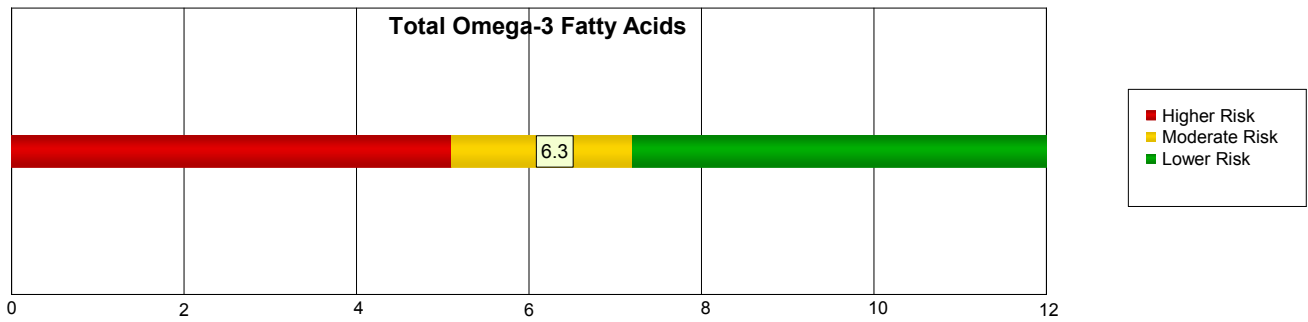
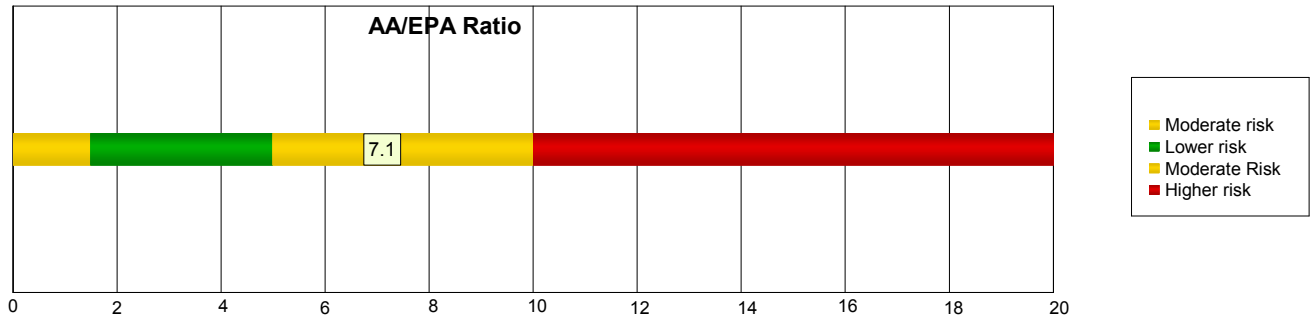
Hormone	Status	Result	Units	Range Information
Total Omega-3 Fatty Acids	Medium risk	6.3	% by weight	>7.2 low risk of heart disease
EPA		2.0	No guidelines established	
DHA Docosahexaenoic	Higher risk	2.4	% by weight:	>4.5 low risk of heart disease
ALA		0.6	No guidelines established	
DPA		1.3	No guidelines established	
EPA + DHA	Medium risk	4.4	% by weight	>4.6 low risk of heart attack death
AA/EPA Ratio	Moderate Risk	7.1	Ratio 1.5 - 5.0:	Low risk of inflammatory disease
Total Omega 6		41	No guidelines established	
AA		14	No guidelines established	
DGLA		3.7	No guidelines established	
GLA		0.1	No guidelines established	
Omega 3/Omega 6 Ratio	Below Normal	0.2	1:3 consistent with anti-inflammation	
Omega 6/Omega 3 Ratio		6.6	No guidelines established	

*Tested at Toronto Medical Laboratories Toronto, ON

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Medical Director

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Ratio of AA to EPA

A 2002 review by Simopoulos states that humans evolved on a 1:1 dietary ratio of AA to EPA. Current research indicates that the optimal ratio likely varies depending on the disease under consideration, but that most diseases show significant improvement when the ratio of AA to EPA is less than 4.5 to 1.

The omega 6 pathway contains arachidonic acid (AA), which is the starter molecule for the inflammation causing prostaglandin 2 series (PG2) of prostaglandins. Anti-inflammatory drugs like ibuprofen act by inhibiting the conversion of AA to these inflammatory prostaglandins.

The omega 3 fatty acid pathway contains eicosapentaenoic acid (EPA). EPA and AA compete for the same enzymes. EPA uses these enzymes to make PG3, which is a class of heart healthy prostaglandins, while AA uses the same enzymes to make the inflammation causing prostaglandin 2 series.

Since AA can be used to make inflammatory prostaglandins, and EPA competes with AA to use the same enzymes to make heart-healthy PG3, an excess of AA over EPA generally results in an inflammatory state. A high ratio of AA to EPA has been associated with a number of inflammatory diseases including: rheumatoid arthritis, psoriasis, asthma and some cancers. High ratios of AA to EPA have also been associated with heart disease and diabetes.

The following strategies may be used to reduce the ratio of AA to EPA:

1. Lower levels of AA by decreasing consumption of trans-fats, saturated fats, hydrogenated vegetable oils and cereal grains.
2. Raise EPA levels by increasing fish intake or by taking fish oil capsules (high in EPA)
3. Raise EPA levels by taking alpha-linolenic acid, an omega 3 fatty acid found in flax seed oil, which can also be converted to EPA. About 2.7% of alpha-linolenic acid per day is converted to EPA, so two tablespoonsful of flaxseed daily generally results in adequate EPA. However, some people may lack enough of the cofactors required to make the conversion. Therefore, use of fish oils may be preferable in patients on multiple medications or those with chronic diseases.

Although a lower ratio is generally desirable, lowering the ratio of AA to EPA to less than 1.5 may be associated with a moderately increased risk of disease. Ideally, for optimal control of inflammation the ratio should remain in the 1.5 to 4.0 range.

Total Omega 3 Fatty Acids

Total Omega 3 measures the percentage by weight of all eight omega-3 fatty acids in the omega-3 fatty acid pathway. Greater than 7.2% by weight of omega 3 fatty acids is associated with decreased risk of developing coronary heart disease.

DHA (Docosohexaenoic acid)

DHA is the end molecule in the omega-3 fatty acid pathway. It is a key component of cell membranes, particularly those in the brain and central nervous system. Having a minimum 4.5% by weight of omega 3 fatty acids as DHA is also associated with a low risk of developing coronary heart disease. Like EPA, DHA is found in abundance in fish oil.

DHA + EPA

A total weight of DHA and EPA of greater than 4.6% is associated with low risk of fatal ischemic heart disease.

References:

Simopoulos AP The importance of the ratio of omega-6 to omega-3 essential fatty acids. *Biomed Pharmacother* 2002;56:365-379

Erasmus U *Fats That Heal, Fats That Kill* 1987. Alive Publications, Vancouver BC



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