

Omega-6 to Omega-3 ratios in margarine 'significant'

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What is this all about?

Clash of ideas



What are the opposing ideas?

Pro ratio

- The ratio of n-6/n-3 is significant for health and disease and is based on solid science

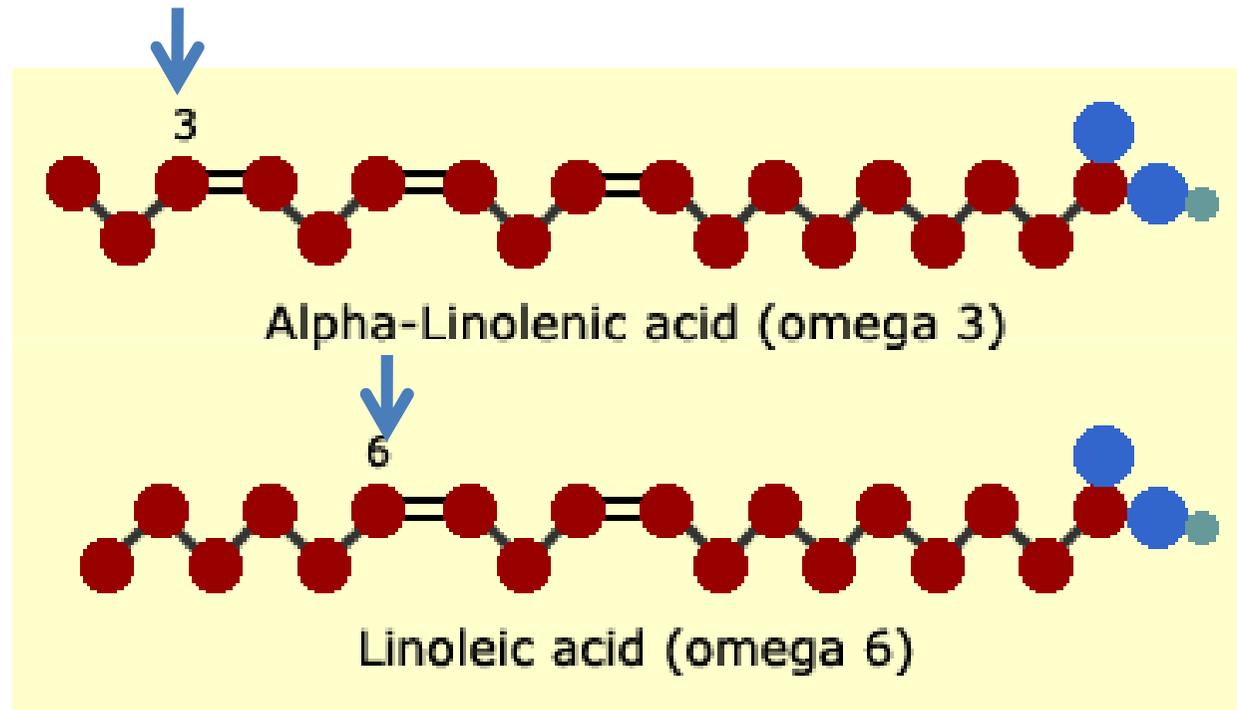
Anti-ratio

- The ratio of n-6/n-3 is not based on good science, has conceptual limitations and no compelling rationale for recommendation of a specific ratio.



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What are omega-3 and omega-6?





Why have a ratio?

- **Example:**
- $n-6/n-3 = 5:1$
- Because this ratio is telling us something very fundamental about the PUFA composition of a food or other biological matrix.
- It is telling us about the quantitative aspects of two very different families of PUFA.

Examples of n-6/n-3 ratios

Aspect

N-6/n-3 ratio

- | | |
|--------------------------------|---------------|
| • Paleolithic diet 40 000 y.a. | • 0.70 |
| • Modern Western diet | • 18.75 |
| • Greece prior to 1960 | • 1.00 – 2.00 |
| • US today | • 16.74 |
| • Sunflower oil | • 70 |
| • Canola oil | • 1.9 |
| • Blossom Canola Margarine | • 2.21 |
| • Greek egg | • 1.3 |
| • Supermarket egg | • 19.9 |
| • Fishmeal egg | • 6.6 |
| • Flax egg | • 1.3 |



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Medical implications of low ratios

Ratio

- High n-6
- High n-3
- N-6/n-3=5
- N-6/n-3=10
- N-6/n-3=4/1
- 2-3/1
- 4-6/1
- 5/1
- Higher n-3
- <4.5/1
- Ratio

Implication

- Higher incidence of breast cancer in Israel
- Hyperinsulinemia, atherosclerosis, tumorigenesis
- Lower risk of breast cancer, colon cancer
- Beneficial re asthma
- Adverse for asthma
- 70% decrease in mortality
- Suppressed inflammation rheumatoid arthritis
- Maximal conversion of short to long n-3
- Optimal mixture for countering deficiency
- Decrease proinflammatory cytokines
- 95% lower risk heart disease
- Predictor of low-grade inflammation

How can all of this lack scientific rationale?



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Significant quote

- **“Currently , the Western diet contains a disproportionately high amount of n-6 PUFAs and low amount of n-3 PUFAS, and the resulting high n-6/n-3 ratio is thought to contribute to cardiovascular disease, inflammation, and cancer”.**
- IM Berquin et al., Department of Cancer Biology, Wake Forest University School of Medicine, Winston-Salem, NC, US. *Cancer Lett.* 2008, 269, 363-377.

Quote from “Margarine Myths debunked”

- “The WHO also concluded that : Based on both the scientific evidence and conceptual limitations, there is no compelling scientific rationale for the recommendation of a specific ratio of omega-6 to omega-3 fatty acids”
- Reasonable conclusion:
- **The n-6/n-3 ratio is not scientific**



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The full WHO statement

- ““The WHO also concluded that “Based on both the scientific evidence and conceptual limitations, there is no compelling scientific rationale for the recommendation of a specific ratio of omega-6 to omega-3 fatty acids, especially if intakes of n-6 and n-3 fats lie within the recommendations in this report”



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What are the recommendations?

- “The minimum intake levels for essential fatty acids to prevent deficiency symptoms are estimated at a convincing level to be 2.5%E LA plus 0.5%E ALA”.
- Another way of putting this is that the n-6/n-3 ratio of E% = $2.5/0.5 = 5/1$
- Conclusion:
- The n-6/n-3 ratio is fundamentally significant and cannot be avoided even by fiat. It is dictated by biochemical imperative.
- (Fiat – an arbitrary order or decree)



N-6/n-3 ratio is significant

- **Rationale:**
- Increased ratio in biological tissue indicates imbalance.
- Imbalanced ratio linked to serious degenerative diseases.
- Ratio can act as a predictor of early disease, e.g. inflammation
- Decreased ratio indicates health (prevention and healing).
- Ratio can indicate need for improvement
- Ratio can indicate biochemistry of deficiency, e.g. 5:1
- Ratio is an efficient communication concept.



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Conclusion

- We have corresponded with various lipid chemists at home and abroad and all are astounded by the FAO/WHO recommendation and think that it is incorrect.
- We have appealed to the WHO Committee to reconsider the recommendation and we are willing to make a formal submission.
- Our own studies of peer-reviewed literature convince us that the n-6/n-3 ratio is significant and that the recognition of the low ratio in canola oil and canola-based margarine can help to reduce the risk of cancer and therefore these products are worthy of recognition with the CANSA “Smart Choice” emblem.



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Thank You