



Cholesterol Insights: A New, *Life-Systems Engineering Science Discovery*

Brief History: I thank my colleague, EFA / eicosanoid specialist Paul Beatty, Toronto, Canada for this brief history regarding cholesterol: In 1958, Ancel Keys published the historic “**7-Countries Study**,” showing a linearly increasing cholesterol level / linearly increasing heart disease connection. ***He misled the world*** by not including many other countries where this correlation does not exist and would have contradicted his hypothesis. Furthermore, *he made no distinction in the quality of fats / oils being critical to human health* — he incorrectly stated that all fats raise cholesterol — especially, saturated fats. **To the contrary, unprocessed / fully functional EFA-containing plant- and seed-based oils lower LDL-cholesterol.**

Keys’ misleading and wrong conclusions were opposed by at least 3 prominent researchers — Hugh Sinclair and Kinsell & Groen in 1952. Sadly, Keys ill-founded argument won the day. This was the beginning of the “no/low fat hypothesis” (*guess*) and the beginning of calling the absolutely required cholesterol [*Textbook of Medical Physiology*], “the enemy.” To this day, the majority of healthcare practitioners in the medical community are still misled in this area, as are their patients.

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Insights:

1. **There is no cholesterol sensor in the bloodstream.** No, this is not a “genetic defect.” There are sensors for glucose (0.1% tolerance across all patients unless diabetic), sodium level, potassium level, etc. Given a system of n-1 linear equations with n independent variables (and no other conditions), there must be 1 degree of freedom; LDL-C will be dependent on virtually everything else. Utilizing a biological systems approach, cholesterol can be viewed as a dependent variable. **Its absolute number, therefore, is irrelevant.** This explains lack of a required sensor. Furthermore, in addition to healing cardiovascular abnormalities, cholesterol has no less than 10 critical functions in the body, (*Textbook of Medical Physiology*). Pre-1990 LDL-C was never considered “bad.”

2. **Other than healing an impaired vascular issue, does cholesterol have other important functions?** YES. LDL-C is the transporter of PEOs (linoleic acid (LA) and alpha-linolenic acid (ALA) — the only 2 essential fatty acids). “**Esterification**” is a condensation reaction (the water is removed) – think of the PEOs being “magnetized” to the cholesteryl molecule for transport in the bloodstream.

3. **Why is this esterification of the cholesteryl molecule to the PEOs critical to the understanding of the action of statins?** Because, due to ubiquitous food processing, all cooking oils contain significant amounts of **highly chemically processed** nonfunctional LA (*transformed from active to functionally impaired* via harmful trans fats / interesterified fat formation, etc.). Therefore, when LDL-C is reduced, its nonfunctional / adulterated LA it transports is also REDUCED, which is very good. **HOWEVER, at the same time, the fully functional, critically important LA transported is REDUCED — very, very bad.** In fact, “all-cause” mortality would be expected to significantly increase in statin users; and it does increase (e.g., increased cancer and diabetes).

4. **Fully functional LA is critical to each of our 100 trillion cells.** Fully functional LA in the cell membranes allow hormones — including insulin — to be more effectively utilized (less insulin resistance). Fully functional LA is also critically important for maximizing CELLULAR OXYGENATION (Campbell) — and lack of / impairment of (cellular) oxygen transport is known to be highly cancer-causing (Warburg).

5. **Does reduction of LDL-C's (esterified) LA cause additional problems?** Yes. Statins are sometimes *claimed* to possess a mild anti-inflammatory action; however, LA's long-chain metabolite, PGE₁, is the **body's most potent natural anti-inflammatory. Statin use decreases its production.** PGE₁ is also known to reverse existing arterial occlusions / thromboses and is a potent natural vasodilator which increases blood flow — all helping to prevent CVD. **Statins also decrease both of these positive effects.**

6. **Why is LA adulterated in the diet?** To obtain long shelf-life and allow long-term use in commercial restaurant baking and frying. Longer use of cooking oils causes shorter life-span in humans because of significantly impaired functionality of LA.

7. **The intima — inner lining of the artery is 100% exclusively made of LA.** Therefore, if there is less of the raw substrate (LA) the patient has a defective arterial lining. If the patient is consuming processed foods (as the vast majority do),

he will also have an increase in defective intima and defective / functionally impaired cell membranes throughout all organs / tissues. Furthermore, virtually all medical textbooks, including the medical standard — *Textbook of Medical Physiology* — state the intima is a mere 1 cell thick. This is incorrect; the intimal structure is actually 8-10 layers thick. [Note: an esteemed pathologist came across my work and sent me a journal article with high-resolution electron photography confirming the multi-layer structure of the intima].

Therefore, with defective / adulterated/ nonfunctional LA there is in actuality up to 10x more chance of impairment to the arterial wall and its structure. **Cholesterol transports fully functional LA to the arterial wall in an attempt to repair defects in the arterial wall.**

8. **Exactly, *what is oxidizing* in LDL-C – the cholesteryl molecule itself or something else?** *The answer is* “something else.” Cholesterol / cholesteryl molecule and LA are each HIGHLY RESISTANT to OXIDATION in the body. There is only 1 anti-oxidant per 165 cholesterol molecules (1:165) — far too

few “protectors to oxidation. [Note: Three double bonds are required before *in vivo* oxidation becomes an issue and LA has only 2 double bonds] — it is the adulterated / processed / nonfunctional LA that the cholesteryl molecule is transporting that is oxidized. This oxidized LA is NOT becoming oxidized in the body it is exogenous – coming in from consumed food already oxidized.

9. **What comprises an arterial occlusion (clog)?** High resolution chromatography confirms the occlusion is approx. 85% nonfunctional / adulterated / processed LA.

10. **Can increasing HDL solve the problem.** Given the analysis above, no, not at all.

SOLUTION: Consuming fully functional LA & ALA (the Parent EFAs) each day is the only answer – it’s easy and the problem is solved. **Note, Keto followers:** Since LA and ALA are long-chain (18-carbon), not medium- or short-chain fatty acids, you are likely deficient in them.

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