



# Research Summary: Cholesterol #1

As featured in Dr. Kenny Mittelstadt's video:  
"Doctor Explains How He Lowers Cholesterol | Top 3 Foods"  
Date of Publication: 02/24/2026

## Research Context:

This topic explores how specific foods influence LDL cholesterol, one of the most commonly screened markers in cardiovascular risk assessment. LDL is often discussed as "bad cholesterol," but that label oversimplifies its role.

LDL is a transport particle. It carries cholesterol through your bloodstream to tissues that need it. The concern arises when LDL particles circulate in higher amounts over long periods of time, increasing the likelihood that cholesterol becomes retained within the arterial wall. That retention process is gradual and can unfold silently over years or even decades.

LDL is not the entire story. Inflammation, oxidative stress, blood sugar regulation, and liver function all interact with how cholesterol behaves in the body. Still, LDL remains a practical starting point because it is widely measured, responsive to lifestyle inputs, and useful for tracking directional change over time. The studies below help connect everyday food choices with measurable shifts in LDL patterns, showing how small, consistent dietary changes can influence long-term cardiovascular trends in a cumulative way.

## Key Findings from the Research:

### Study 1 (PMID 31006811):

This large meta-analysis reviewed 46 controlled trials examining soy protein and cholesterol levels. Researchers found that replacing other protein sources with soy protein led to modest but consistent reductions in LDL and total cholesterol. While the average change was not dramatic, it was reproducible across many studies. For real-world application, this suggests that swapping higher saturated fat proteins for soy-based options such as tofu, tempeh, or edamame can gently lower LDL over time. The benefit appears to come from substitution, not simply adding soy on top of an already high saturated fat intake.

### Study 2 (PMID 36796439):

This systematic review and dose-response analysis examined soluble fiber supplementation across numerous randomized controlled trials. Soluble fiber forms a gel-like substance in the digestive tract that binds cholesterol and helps remove it from the body. The review found that increasing soluble fiber intake was associated with predictable reductions in LDL cholesterol. Importantly, higher fiber intake was linked to proportionally larger LDL reductions, meaning the effect followed a measurable pattern rather than random fluctuation. Foods such as oats, beans, barley, and certain fruits provide this type of fiber.

### Study 3 (PMID 40672367)

This meta-analysis evaluated phytosterol-rich foods in individuals with higher cholesterol levels. Phytosterols are plant compounds that resemble cholesterol structurally and compete with it for absorption in the digestive tract. The analysis found that consuming foods higher in phytosterols resulted in lower LDL cholesterol levels compared to control diets. These reductions were modest but consistent across pooled data. Nuts, seeds, whole grains, and certain fortified foods naturally contain these compounds and may contribute to LDL shifts when consumed regularly.



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## Functional Medicine Connections:

Here is how these pieces fit together. LDL cholesterol reflects how your body absorbs, transports, and eliminates cholesterol. Soluble fiber supports elimination by helping escort cholesterol out of the digestive tract. Phytosterols reduce absorption by competing with cholesterol in the gut. Soy protein appears to influence lipid metabolism in a way that shifts LDL modestly downward, likely through changes in how cholesterol is processed and cleared. Each of these represents a different communication point in the body's regulatory network, influencing cholesterol handling at multiple stages rather than through a single pathway.

LDL does not act alone. Inflammation, liver function, metabolic health, blood sugar regulation, and overall dietary patterns all shape how LDL particles behave once they are circulating. The liver plays a central role in producing, recycling, and clearing cholesterol, which means systemic stress or metabolic strain can influence LDL patterns beyond food alone. These studies reinforce that food is a meaningful input signal within a larger physiological system. The effects are not immediate or extreme, but they are measurable and cumulative.

## Practical Reflections & Takeaways:

When you look at your own lab trends, do you notice gradual shifts over time rather than sudden changes? LDL patterns often reflect cumulative inputs, not isolated events. A single lab value can feel alarming or reassuring, but the real story is usually found in the direction of change across years. Cholesterol regulation is influenced by repeated daily signals, and those signals build over time.

If you adjust one part of your diet, such as increasing fiber intake or changing your primary protein source, it is helpful to think in terms of months rather than weeks. Meaningful metabolic shifts rarely happen overnight. Instead, they tend to follow a steady trajectory that mirrors the consistency of the change itself. Tracking trends over longer intervals can provide clearer insight into how your body responds to sustained inputs. Your lab numbers are not random. They represent patterns shaped by daily behaviors, metabolic load, stress exposure, sleep quality, liver regulation, and overall system balance. When viewed through that lens, your labs become less about isolated markers and more about ongoing communication from your body about how it is adapting to its environment.

## Want Dr. Kenny's Eyes on Your Case?

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