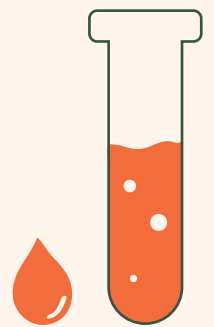# BLOOD TEST GUIDE

An Additional Resource for *The Proof is in the Plants*

SIMON HILL
Creator of The Proof Podcast and
author of The Proof is in the Plants

THE PROOF

CONTENTS

A NOTE FROM ME

HI FRIENDS,

It's great to have you here with me.

My name is Simon Hill—host of The Proof podcast, nutritionist, sports physiotherapist, creator of **theproof.com** blog and author of *The Proof is in the Plants*.

My philosophy is simple. We live in an environment that makes it incredibly hard to follow an evidence-based dietary pattern, an environment that in many ways sets us up for failure. Rather than waiting for this environment to change, or waiting to experience pain, I want to arm you with evidence-based solutions. This will help you better navigate the world in which we live and improve your chances of living a long, healthy life, allowing you to do more of whatever it is you love to do.

It took me a master's in Nutrition and years of research to understand the science and how our food choices are shaped. However, I believe that this information should be easily accessible to everyone.

This isn't about dietary labels or agendas. It's a space to honour science, to honour learning as a community and to encourage progress over perfection. If you want to improve your health and tread more lightly on the planet, I am here to help you do that.

Yours truly,

Simon

THE PROOF IS IN THE PLANTS

What if there was a way of eating that may help us live healthier for longer and protect the future of our planet, too?

The good news is that evidence now shows a plant-based diet may offer us exactly that – I've done the hard work translating the science into actionable advice for everyday life.

In my first book **The Proof is in the Plants**, I bring together all the facts and advice for anyone curious about feeling and doing better through a plant-focussed diet.

Before transitioning to a plant-based diet I held many of the common misconceptions. But instead I experienced incredible improvements in my energy levels, digestion, mental clarity and post-workout recovery after making the shift. I'd finally understood the power of food and was determined to find out – and share – the agenda-free truth about the optimum diet for human health.

By undertaking a master's degree in nutrition, poring over the latest scientific papers and books, and producing hundreds of hours of my internationally successful The Proof podcast, I have pursued the answers to all the questions I had about fuelling our bodies with more plants. Now, in my first book, I bring it all together into one inspiring and practical guide.

It covers:

- The reasons why we're all so confused about what to eat

- The evidence showing how a plant-based diet can reduce the risks of heart attacks and strokes, type 2 diabetes, cancer and dementia

- The positive impact of plant-based living for the climate and animal welfare

- Common myths about a plant-based diet – and what the real facts are

- How to build a healthy, satisfying plant-based plate, from macronutrients to micronutrients

- Practical tips for making the shift, and much more

If you want to understand and unlock the many benefits of putting more plants on your plate, this book is for you.
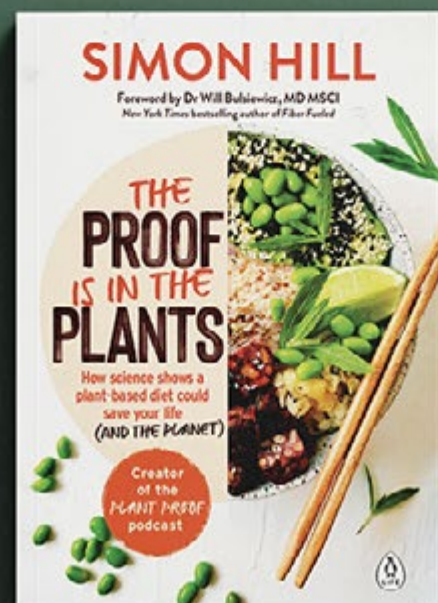
LEARN MORE ABOUT THE BOOK

FRIENDS OF THE PROOF

Recommendations, resources, discounts, and more — here you'll find brands and products that are Proof friendly to help you live better for longer.

Essential 8 is your must-have daily vitamin, scientifically formulated to complement your plant-focused diet. Crafted to deliver the optimal dosage of nutrients in highly bioavailable forms, Essential 8 helps you maintain a healthy immune system and supports your cardiovascular, bone, and brain health.

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BLOOD TEST GUIDE

BLOOD TEST GUIDE

As I describe in my book *The Proof is in the Plants*, getting a blood test (and other lab tests) is an important part of understanding the status of your current health and how it is changing over time as the foods on your plate, and your overall lifestyle, shift. While every doctor can certainly order lab tests, sometimes they do not order specific tests that are particularly helpful for assessing the overall nutritional adequacy of a plant-predominant or plant-exclusive whole-food, plant-based diet (WFPBD).

The aim of this guide is not to repeat information in my book about the importance of specific vitamins and minerals. Instead, it will arm you with the information you need to be able to productively converse with your doctor to ensure your blood test is as comprehensive and informative as it should be. Plus, it will help you make sense of your results.

WE WILL GO THROUGH THESE KEY PARTS OF YOUR LAB TESTS:

VITAMIN B$_{12}$ STATUS	VITAMIN D STATUS	IRON STATUS	IODINE STATUS
ZINC STATUS	WHITE BLOOD CELL (WBC) COUNT	OMEGA-3 STATUS	LIPID PANEL

We will go through each one by one and then finish with a summary table that you can take to your Doctor's appointment.
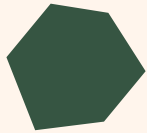
VITAMIN B12 STATUS

When it comes to B_{12} status, the standard test on routine blood tests is serum B_{12}. This test is not very sensitive because it fails to distinguish between inactive and active B_{12} in the blood—which means that quite often, the result can come back as normal even if you are deficient.[1] We call this a false positive.

Therefore, if your serum B12 is close to 300 pg/mL (even if it's a bit higher), I recommend running additional tests for anyone following a WFPBD (particularly when new to the dietary framework or not supplementing regularly). These additional tests are ***homocysteine, MMA and Holo-TC*** (summarised below). Depending on the country you live in, these tests may or may not be covered by your local healthcare provider. If they are covered, or if money is not an issue, I recommend adding all three to your blood test. If they are not covered and you only want to pay for one, ***Holo-TC*** is the best option as it is the most reliable and specific of these three additional tests.

TEST	RELIABILITY	RATIONALE	NORMAL RANGE
SERUM B_{12}	Unreliable	Can give a false positive due to inactive B_{12} analogues in the blood	> 300 pg/mL
HOMOCYSTEINE	Reliable but not specific	Vitamin B6, B_{12} and folate are needed to metabolise homocysteine. Thus, high blood homocysteine levels can be indicative of a deficiency in one or more of those vitamins	< 12 µmol/litre
MMA (METHYLMALONIC ACID)	Reliable and more specific than homocysteine for B_{12} status[1]	If B_{12} is low, MMA will become elevated in the blood. If MMA is not elevated but homocysteine is, it's likely the person has a folate deficiency. When both homocysteine and MMA are high, it is almost always a sign of B_{12} deficiency[2]	Blood MMA < 260 nmol/L

Urine MMA < 4 mg /mg creatinine |
| **HOLO-TC ('ACTIVE' B_{12} TEST)** | Very reliable and more sensitive to changes in active B_{12} than MMA[3] | Holo-TC has been shown to decrease in vegan populations with insufficient vitamin B_{12} intake before changes to homocysteine and MMA[4] | > 30 pmol/L |

VITAMIN B12 STATUS

If you are deficient in B_{12}, your doctor will most likely recommend high-dose B_{12} injections to bring your B_{12} status up to a healthy range, whereby you should then take a B_{12} supplement.

For information on how much B_{12} to supplement to avoid deficiency, refer to page 310–314 in *The Proof is in the Plants*. And for recommended brands, see my Supplement Guide.

VITAMIN D STATUS

The blood test ordered to assess vitamin D status is called a vitamin D 25(OH) measurement. While global guidelines vary, a level between 50 to 100 nmol/L (20 to 40 ng/mL) is generally considered normal. It's important to understand that one's vitamin D status typically goes up in the summer (through sun exposure) and down in the winter (through lack of sun exposure), when one becomes most at risk of deficiency.[5] So, if you get a test during summer, that doesn't mean you will have a healthy vitamin D status year-round.

| VITAMIN D 25(OH) TEST	AUSTRALIAN	CONVENTIONAL UNIT
REFERENCE RANGE	50–100 nmol/L	20–40 ng/mL
MILD DEFICIENCY	30–49 nmol/L	12–20 ng/mL
MODERATE DEFICIENCY	13–29 nmol/L	5–12 ng/mL
SEVERE DEFICIENCY	< 13 nmol/L	< 5 ng/mL
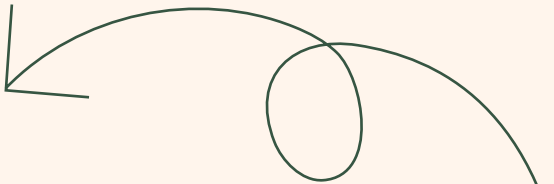
VITAMIN D STATUS

Because vitamin D levels drop in the winter, an optimal level is at least 60–70 nmol/L at the end of the summer and > 50 nmol/L at the end of the winter. So, at your lowest point for the year, you're still within the reference range. If you are taking a daily supplement year-round of 500–2000 IU per day, you don't need to worry about falling below 50 nmol/L. That's why I call it an insurance policy—it's got you covered if your sun exposure greatly declines.[6]

If you haven't had a recent blood test, my recommendation is to either get one or assume you are low (as many people are, particularly in winter). Then, proactively set up a routine that consists of one or more of the following: safe sun exposure, consumption of fortified foods or supplementation (as explained in pages 314–318). Doing this will ensure healthy levels year-round.

Personally speaking, despite living in quite a sunny location, as an insurance policy, I supplement with 1000 IU of vitamin D per day all year round. I've found that during the summer months, even with this supplement, my vitamin D status stays within the healthy range. If a blood test revealed my level was too high, I would simply stop supplementing with vitamin D during the summer. I go over my vitamin D supplement recommendations in more detail in my **Supplement Guide**.
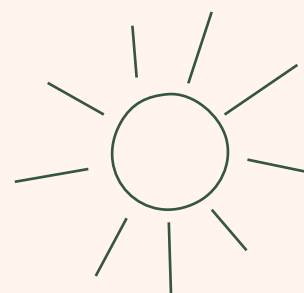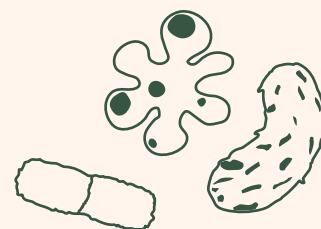
IRON STATUS

Iron status is not as simple as just looking at iron stores. In fact, there are 4 common tests to evaluate iron status:[7-11]

1. **Serum iron** → Iron in your blood

2. **Serum ferritin** → Stored iron

3. **Transferrin or total iron-binding capacity (TIBC)** → The number of iron transporting molecules the body has

4. **Transferrin Saturation** → How many of the iron transporting molecules are actually carrying iron

Typically, the iron studies listed above are ordered at the same time as haemoglobin (Hb) (a test for anemia that is not specific to iron) or after initial results show low Hb levels. At the minimum, it's a good idea to request a serum ferritin (iron stores) blood test in addition to the standard serum iron (iron in your blood) test—if both of these are below the normal range, it's a pretty good indicator of deficiency. Remember, as per *The Proof is in the Plants*, if iron stores are low but iron in the blood is normal, many believe this is nothing to be concerned by as long as you are consuming enough iron per day. In fact, this may be one of the protective benefits of a WFPBD.

IRON STATUS

The 4 common tests to evaluate iron status are summarised below

TEST	DESCRIPTION	NORMAL RANGE	TEST RESULTS INDICATING POSSIBLE IRON DEFICIENCY
HAEMOGLOBIN (HB)	Hb is not typically considered as a part of iron studies. However, iron studies are often ordered to identify the cause of low Hb/anemia	Male: 130–180 g/L Female: 120–160g/L	< 130g/L (males over 15 years) < 120 g/L (non-pregnant females over 15 years) < 110 g/L (pregnant females)
SERUM IRON	Serum iron measures the amount of iron in your blood	10–30 umol/L (60–170 mcg/dL)	< 10 umol/L If serum iron is low and serum ferritin levels are normal, this does not equal iron deficiency
SERUM FERRITIN	Serum ferritin measures the amount of stored iron in your body. The most powerful test for iron status in the absence of inflammatory or liver disease. When iron levels are low, the body will call on iron from storage for use and thus ferritin levels will decrease. With that said, there appears to be no benefit of having stores above the normal range[12]	Male: 40–300 mcg/L Female: 20–200 mcg/L	< 10 mcg/L
TRANSFERRIN OR TOTAL IRON-BINDING CAPACITY (TIBC)	These are two different tests that essentially measure the same thing—the body's ability to transport iron. When the body recognises iron stores are low, it turns up the production of these iron-transporting molecules. Thus, when someone is low or deficient in iron, these tests produce levels above normal	**TIBC** 42.96 to 80.55 umol/L (240–450 mcg/dL) **TRANSFERRIN** Males: 80-180 mcg/dL or 14-32 umol/L) Females: 60-160 mcg/dL or 11-29 umol/L	Above normal levels
TRANSFERRIN SATURATION	This is the amount of transferrin that is bound to iron	20–35%	< 20%

Sourced from [7–11]

IRON STATUS

Typical results from a blood test suggesting iron deficiency

SERUM IRON	SERUM FERRITIN	TRANSFERRIN/TIBC	TRANSFERRIN SATURATION
Low	Low	High	Low

Anyone with iron deficiency anemia is advised to take an oral iron supplement (see my **Supplement Guide** for recommendations on the type of iron supplement to choose) or have a series of intravenous (IV) Injections until Hb and iron store levels return to normal.[9,13] Similar to when consuming food with iron, combining ascorbic acid (vitamin C) with an oral iron supplement may enhance absorption.[14] It's also best to consume iron supplements away from meals on an empty stomach to increase absorption.

Generally speaking, the IV iron therapy is used for patients who have not responded to oral iron therapy or who have excessive blood loss per day (over 10 ml). Of the various forms of IV iron, ferric carboxymaltose is typically the preferred form of iron as it has the shortest infusion time (15 minutes) and has been clinically shown to be well-tolerated by pregnant women without any serious adverse effects.[9,13,15,16] Because high-dose iron supplements, and iron overload, come with a plethora of side effects (constipation, nausea and oxidative stress, to name a few), it is generally recommended not to rely on these long term—guidelines suggest that oral iron supplementation should be continued for 3 months after the deficiency is corrected to ensure iron stores are adequately replenished.[9]

If you are diagnosed with iron deficiency anemia, it's crucial you work with your doctor to investigate the underlying cause rather than assuming it's your diet. Conditions such as atrophic gastritis, colonic or gastric cancer, celiac disease or chronic gastrointestinal bleeding, all of which affect iron absorption, should be ruled out first—usually, this means a referral to see a gastroenterologist.[13] If you are taking aspirin or non-aspirin, non-steroidal, anti-inflammatory drugs (NSAIDs), it is worth discussing whether or not these are clinically required as they have been shown to cause damage to the gastrointestinal tract and subsequently cause chronic bleeding and a heightened risk for iron deficiency anemia.[17–19]

Patients advised to take oral or IV iron therapy who have had these serious gastrointestinal conditions ruled out should review their diet to improve iron intake and absorption where possible to give themselves the greatest chance possible of maintaining a healthy iron status after supplementation ceases.

Of course, if your blood test reveals low iron levels without deficiency, my recommendation is to review the foods you are eating and ways to improve iron absorption before considering supplementation, which we cover in detail in pages 332–340.

IODINE STATUS
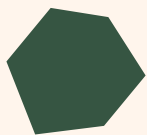
If there is a micronutrient that deserves more airtime, it is iodine—a mineral that is integral to healthy thyroid function. A large percentage of the general population is unknowingly deficient in iodine due to changes in dietary habits and global soil quality (why iodised salt was introduced).[22,23]

The most common laboratory tests to determine iodine status include urinary iodine concentration and thyroid hormone levels (taken via blood test—when we have insufficient iodine in our diet, our bodies make fewer thyroid hormones). Laboratory results showing low levels or deficiency should be compared with information collected from a food frequency questionnaire to help determine if the issue is due to inadequacy of iodine-rich foods in the diet or poor absorption.

In pages 329–332, we go over the best ways to follow a WFPBD to maintain a healthy iodine status. This can be achieved by focussing on specific foods or taking a supplement (usually 150 mcg per day).

ZINC STATUS

The most common test for determining zinc status is a blood test that measures plasma zinc (also called *serum zinc*). While measuring the plasma zinc concentration is pretty good at detecting moderate to significant zinc deficiency, mild deficiency often goes undetected.[20] Another common test used to determine zinc status is the zinc taste test method, often chosen because it's quick and inexpensive. However, this has not been shown to be any better than measuring plasma zinc at identifying mild deficiency.[21]

This means despite normal results from one or both of these tests, if you are presenting with symptoms of zinc deficiency, such as depressed immunity and impaired taste, it would be sensible to review your diet and food preparation strategies to increase both the amount of zinc you're consuming and the amount of zinc you absorb. It would also be sensible to consider supplementation. Often, dietary changes alone are enough to see symptoms disappear. If one decides to take a zinc supplement, the end goal would be to get to a point where supplementation can be reduced or removed and the dietary changes that have been put in place are enough to prevent the symptoms of deficiency from returning.

For information on improving zinc intake and absorption, see pages 345–352.
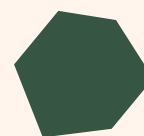
WHITE BLOOD CELL COUNT

A small percentage of people who transition to a WFPBD notice their white blood cell (WBC) count drops to the bottom end of the reference range, and sometimes below the reference range. Rest assured, most of the time, a low WBC count is completely normal and in fact a sign that you are healthier than what we define 'normal' as. The reference ranges for WBC count are based on the general population. White blood cells are part of our immune system, moving through the blood helping to fight off infections that are invading the body. But it's not only acute infections, like appendicitis, that they combat but also inflammation.[24]

Given the majority of our population is overweight and excessive fat stores cause inflammation, it's no wonder that the average person in Western populations has a relatively high WBC, which we incorrectly reference as normal. How can we be so sure of this? Well, when you look at the literature, it's those with a lower WBC count that have less disease and liver longer![25–27]

A low WBC count in an otherwise healthy person is essentially a sign that their body is less inflamed. This is why many believe a WBC count of 3–8 x 109/L better reflects healthy levels (summarised in the table below with conversions depending on which unit measurements your country uses).[25]

Context is also important here. It's important to understand what someone's baseline WBC is and what lifestyle changes they have made. If someone's WBC drops significantly (compared to their previous test) and their diet and other lifestyle factors did not change, their doctor would likely feel compelled to investigate further. However, if the patient has always had a relatively low WBC count (genetically, some of us do) and recently changed their diet to a less inflammatory one (e.g. WFPBD), a lower than average WBC count would be expected.
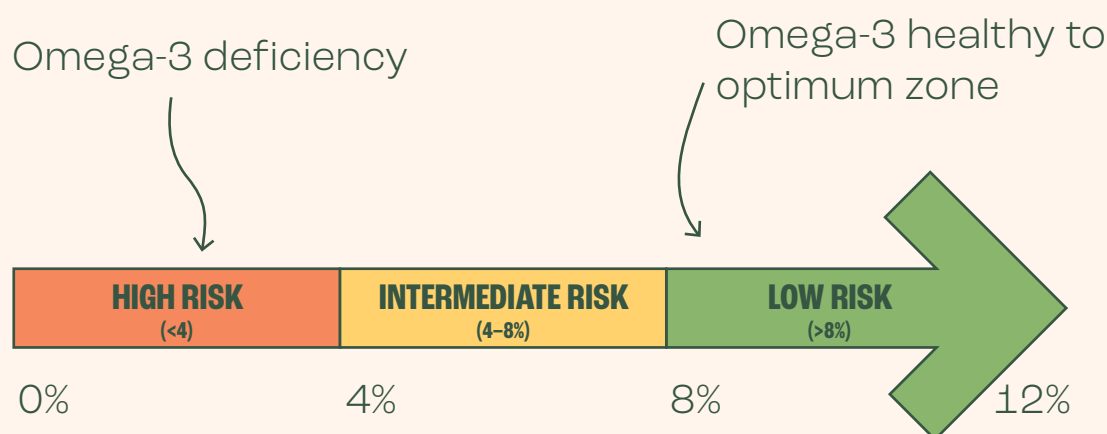
	AUSTRALIA	CONVENTIONAL UNITS
Reference range	3,000–10,000 cells/μL	3-8 x 109/L
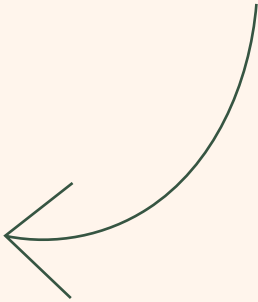
OMEGA-3 STATUS

Since the early 2000s, it has been possible to measure the amount of EPA and DHA (omega-3s) in red blood cells using the omega-3 Index.[28] Studies from large populations suggest a result of 6% is the average. An increase of 2–8% above this average is associated with a 15% reduction in risk of death from coronary heart disease. Similarly, a 2–4% decrease from this average is associated with a 15% increase in risk of death from coronary heart disease. Effectively, that means someone with an omega-3 index of 8% has a 30% lower risk of dying from coronary heart disease compared to someone with an omega-3 index of 4%.[29] As this finger prick test is usually not part of a standard blood test, you need to request it when speaking with your doctor.

Omega-3 index zones[29,30]:

Omega-3 deficiency

Omega-3 healthy to optimum zone

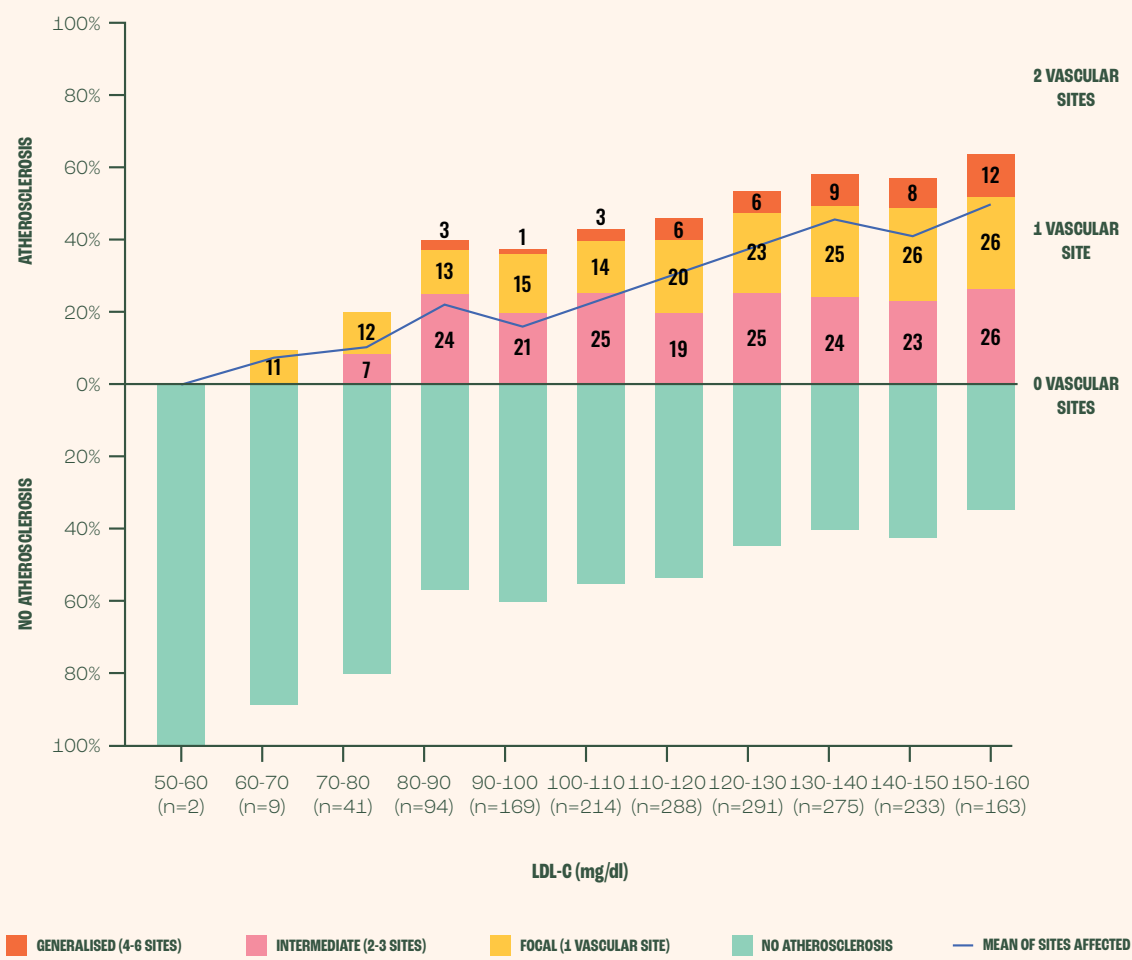| HIGH RISK (<4)	INTERMEDIATE RISK (4–8%)	LOW RISK (>8%)

0%   4%   8%   12%

On pages 305–310 in *The Proof is in the Plants*, we go through the importance of omega-3s in detail—specifically focussing on how to set up our diet and supplement protocol to optimise our health.

LIPID PANEL

A lipid panel will typically be a standard part of your blood test that looks at your cholesterol and triglyceride levels. As we spoke about in chapter 5 of **The Proof is in the Plants**, the most important measurement here is your LDL cholesterol or 'LDL-C' and to a lesser extent, your triglyceride levels. Your HDL cholesterol or HDL-C level is no longer considered a good indicator of cardiovascular health—years ago, it was thought to be, but after significant research looking more closely at HDL, we now understand it is HDL function that matters more so than HDL quantity (which you cannot measure from a blood test).

As you can see below, it's not until someone gets their LDL-C down to around 60 mg/dl that they are at a level where atherosclerosis (narrowing of the arteries) simply does not happen![31] So, while < 100 mg/dl is considered healthy by doctors, it pays to remember that taking averages from an unhealthy population really isn't that helpful, not if we are striving for more years in good health.

Relation between LDL-C levels and athersclerosis:

Chart legend:
- GENERALISED (4-6 SITES)
- INTERMEDIATE (2-3 SITES)
- FOCAL (1 VASCULAR SITE)
- NO ATHEROSCLEROSIS
- MEAN OF SITES AFFECTED

X-axis: LDL-C (mg/dl) — 50-60 (n=2), 60-70 (n=9), 70-80 (n=41), 80-90 (n=94), 90-100 (n=169), 100-110 (n=214), 110-120 (n=288), 120-130 (n=291), 130-140 (n=275), 140-150 (n=233), 150-160 (n=163)

LIPID PANEL

IMPORTANT LIPID PANEL TESTS

1. LDL-C

2. TRIGLYCERIDES

3. NON-HDL CHOLESTEROL (OR APOB)[36, 37, 38, 39]	The reference range for ApoB is: < 100mg/dL (1g/L) for low risk individuals. Less than 80mg/dL (0.8g/L) for higher risk individuals.

| 4. LP(A)[34, 35]	The reference range for LP(a) is: Lp(a) <30 mg/dL (75 nmol/L). Ideal is <10 mg/dL (18 nmol/L) *Note as LP(a) is determined almost entirely by genes, not lifestyle, you only need to do this test once.
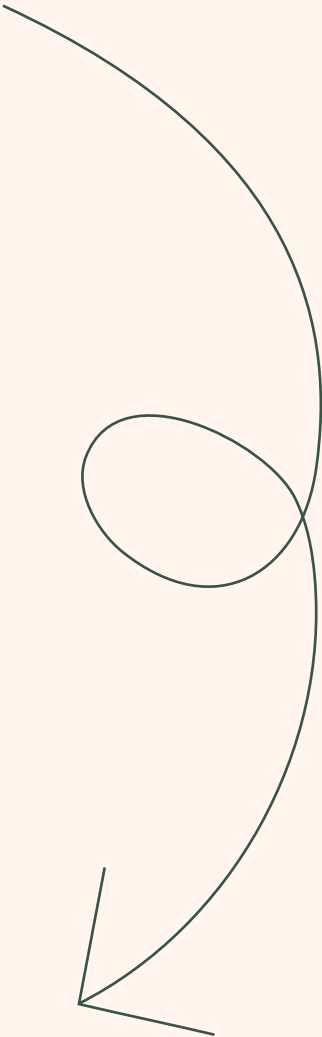
LIPID PANEL

DEEP DIVE NOTE:

Despite the fact that there is a highly vocal minority group online who suggest that LDL-C levels don't matter as long as triglycerides and HDL-C are normal, that is speculation and, in all likelihood, very dangerous speculation. In the Framingham study, subjects with high LDL-C but normal triglycerides and HDL-C had a 28% higher risk of developing cardiovascular disease.[32]

	LDL-C*	TRIGLYCERIDES	NON-HDL CHOLESTEROL
REFERENCE RANGE	< 100 mg/dL (2.59 mmol/L) However, the ideal level, particularly for people with cardiovascular disease or Type 2 diabetes, is likely to be 50–75 mg/dL (1.5mmol/dl) or even lower.	< 150 mg/dl (1.7 mmol/L)	< 130 mg/dL (3.37 mmol/L)

✳ Note:
There is now a new test called Apo-B that is slightly more reliable for predicting cardiovascular risk than LDL-C (for reasons that are beyond the scope of this guide). If your doctor can order this in addition to LDL-C, it's worth asking for. The other test often ordered is non-HDL cholesterol. Essentially, this looks at all of the cholesterol that has the potential to cause atherosclerosis (narrowing of the arteries). It includes LDL-C and some other atherogenic-cholesterol-containing particles and as such is a good measure of risk. After ApoB, the second most informative lipid measurement to determine your risk of atherosclerosis is non-HDL cholesterol.

If you have high LDL-C (or high non-HDL cholesterol) and want to learn about how dietary changes can help you improve these levels, please read *The Proof is in the Plants*. With dietary change, you can expect to drop your LDL-C levels by around 23.2 mg/dL (0.6 mmol/L).[33]
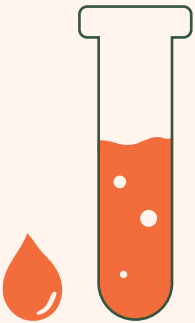
ADDRESSING DEFICIENCY

If your laboratory results come back and show a vitamin or mineral deficiency, work with your doctor to develop a plan to bring the level back to within a healthy range. Usually, this involves supplementation while simultaneously adjusting your diet to focus on key foods (as per recommendations in Part 3 of *The Proof is in the Plants*) to restore normal levels. The end goal is to become less reliant on supplements, as your diet offers increasingly higher amounts of that nutrient in a form that is easily absorbed.

It is incredibly beneficial to get a blood test before transitioning your diet because it shows your baseline. If you don't have your baseline and go into your dietary transition with an existing deficiency, you may incorrectly attribute the new foods to low levels of that nutrient. In reality, it could be that your new diet has improved the level of that nutrient, but you were coming from such a low level at baseline.

If you are planning to take a particular supplement, be sure to read **The Proof Supplement Guide** which walks through over 10 different types of supplements, the ideal dosage, best forms (e.g. potassium-iodine or kelp for iodine) and a few of the brands I recommend.
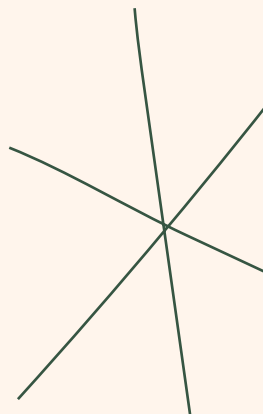
THE PROOF BLOOD TEST CHECKLIST ✓

Here are the important tests to ensure your doctor orders:

B12 STATUS	As serum B12 isn't very sensitive, it's a good idea to test MMA or Holo-TC
VITAMIN D STATUS	Vitamin D 25(OH) test
IRON STATUS	Serum iron and serum ferritin as a bare minimum
OMEGA-3 STATUS	Omega-3 Index
LIPID STATUS	LDL-C, non-HDL cholesterol and triglycerides; additionally, if they can request Apo-B, it's worth getting
IODINE STATUS	Urinary iodine test

If you have high LDL despite eating well, and leading a healthy lifestyle, it may be genetic. It would be sensible in this case to test ApoB and to discuss the results with your doctor or cardiologist.

OTHER THINGS TO REMEMBER:

- Serum zinc tests are not very reliable, so even if your zinc test comes back normal, if you have signs of zinc deficiency (e.g. loss of taste), you should proactively look at your diet to increase zinc intake and absorption and consider supplementation.

- A WBC count of 3–8 x 109/L (3,000–10,000 cells/μL) is considered normal within the context of being otherwise healthy.

- Proactively set up a daily routine to ensure healthy vitamin D status by looking at safe sun exposure, fortified foods and/or supplementation.

THE PROOF BLOOD TEST RESULTS TRACKER

Test

B12 STATUS

VITAMIN D STATUS

IRON STATUS

OMEGA-3 STATUS

LIPID STATUS

IODINE STATUS

(ApoB or non-HDL are the most important tests to do routinely. And order LP(a) as a one off test)

Results

Column 1

Date: /   /

Time Of Test:

O Fasting
O Non-Fasting

NOTES

Diet:

Weight:

Sleep:

Exercise:

How I Feel:

Column 2

Date: /   /

Time Of Test:

O Fasting
O Non-Fasting

NOTES

Diet:

Weight:

Sleep:

Exercise:

How I Feel:

Column 3

Date: /   /

Time Of Test:

O Fasting
O Non-Fasting

NOTES

Diet:

Weight:

Sleep:

Exercise:

How I Feel:

REFERENCES

1. Vashi, P., Edwin, P., Popiel, B., Lammersfeld, C. & Gupta, D. Methylmalonic Acid and Homocysteine as Indicators of Vitamin B-12 Deficiency in Cancer. PLoS One **11**, (2016).

2. Savage, D. G., Lindenbaum, J., Stabler, S. P. & Allen, R. H. Sensitivity of serum methylmalonic acid and total homocysteine determinations for diagnosing cobalamin and folate deficiencies. The American Journal of Medicine vol. 96 239–246 (1994).

3. Valente E, E. al. Diagnostic accuracy of holotranscobalamin, methylmalonic acid, serum cobalamin, and other indicators of tissue vitamin B$_{12}$ status in the elderly. - PubMed - NCBI. https://www.ncbi.nlm.nih.gov/pubmed/21482749.

4. Lloyd-Wright, Z., Hvas, A.-M., Møller, J., Sanders, T. A. B. & Nexø, E. Holotranscobalamin as an indicator of dietary vitamin B12 deficiency. Clin. Chem. **49**, 2076–2078 (2003).

5. Australian Health Survey: Biomedical Results for Nutrients. https://www.abs.gov.au/statistics/health/health-conditions-and-risks/australian-health-survey-biomedical-results-nutrients/latest-release (2013).

6. Nowson, C. A. et al. Vitamin D and health in adults in Australia and New Zealand: a position statement. Med. J. Aust. **196**, 686–687 (2012).

7. [No title]. https://www.rcpa.edu.au/getattachment/554ba672-4d34-4e7c-b812-5741359bca78/Iron-Studies-Standardised-Reporting-Protocol.aspx.

8. [No title]. https://www.rcpa.edu.au/getattachment/554ba672-4d34-4e7c-b812-5741359bca78/Iron-Studies-Standardised-Reporting-Protocol.aspx.

9. Goddard, A. F., James, M. W., McIntyre, A. S., Scott, B. B. & on behalf of the British Society of Gastroenterology. Guidelines for the management of iron deficiency anaemia. Gut vol. 60 1309–1316 (2011).

10. McLean, E., Cogswell, M., Egli, I., Wojdyla, D. & de Benoist, B. Worldwide prevalence of anaemia, WHO Vitamin and Mineral Nutrition Information System, 1993-2005. Public Health Nutr. **12**, 444–454 (2009).

11. Iron-Deficiency Anemia | National Heart, Lung, and Blood Institute (NHLBI). https://www.nhlbi.nih.gov/health-topics/iron-deficiency-anemia.

REFERENCES

12. Park, S. K., Ryoo, J.-H., Kim, M.-G. & Shin, J.-Y. Association of serum ferritin and the development of metabolic syndrome in middle-aged Korean men: a 5-year follow-up study. Diabetes Care **35**, 2521–2526 (2012).

13. Terri D. Johnson-Wimbley, D. Y. G. Diagnosis and management of iron deficiency anemia in the 21st century. Therap. Adv. Gastroenterol. **4**, 177 (2011).

14. Hallberg, L., Brune, M. & Rossander-Hulthén, L. Is There a Physiological Role of Vitamin C in Iron Absorption? Annals of the New York Academy of Sciences vol. 498 324–332 (1987).

15. Froessler, B., Gajic, T., Dekker, G. & Hodyl, N. A. Treatment of iron deficiency and iron deficiency anemia with intravenous ferric carboxymaltose in pregnancy. Arch. Gynecol. Obstet. **298**, 75 (2018).

16. Christoph P, E. al. Intravenous iron treatment in pregnancy: comparison of high-dose ferric carboxymaltose vs. iron sucrose. - PubMed - NCBI. https://www.ncbi.nlm.nih.gov/pubmed/22945271.

17. Allison, M. C., Howatson, A. G., Torrance, C. J., Lee, F. D. & Russell, R. I. Gastrointestinal Damage Associated with the Use of Nonsteroidal Antiinflammatory Drugs. New England Journal of Medicine vol. 327 749–754 (1992).

18. Lanas, A. & Sopeña, F. Nonsteroidal Anti-Inflammatory Drugs and Lower Gastrointestinal Complications. Gastroenterology Clinics of North America vol. 38 333–352 (2009).

19. Thiéfin, G. & Beaugerie, L. Toxic effects of nonsteroidal antiinflammatory drugs on the small bowel, colon, and rectum. - PubMed - NCBI. https://www.ncbi.nlm.nih.gov/pubmed/16038840/.

20. Young, G. P. et al. Zinc deficiency in children with environmental enteropathy-development of new strategies: report from an expert workshop. Am. J. Clin. Nutr. **100**, 1198–1207 (2014).

21. Gruner, T. & Arthur, R. The accuracy of the Zinc Taste Test method. J. Altern. Complement. Med. **18**, 541–550 (2012).

22. c=AU, o=Commonwealth of Australia & ou=Australian Bureau of Statistics. Chapter - Feature article: Iodine. 4364.0.55.006 / 2011-12 / Australian Health Survey: Biomedical Results for Nutrients / Feature article: Iodine / Summary (2013).

23. Farhana Ahad, S. A. G. Iodine, Iodine metabolism and Iodine deficiency disorders revisited. Indian J. Endocrinol. Metab. **14**, 13 (2010).

REFERENCES

24. Farhangi, M. A., Keshavarz, S. A., Eshraghian, M., Ostadrahimi, A. & Saboor-Yaraghi, A. A. White blood cell count in women: relation to inflammatory biomarkers, haematological profiles, visceral adiposity, and other cardiovascular risk factors. J. Health Popul. Nutr. **31**, (2013).

25. Huang, Z. S., Lo, S. C., Tsay, W., Hsu, K. L. & Chiang, F. T. Revision in reference ranges of peripheral total leukocyte count and differential leukocyte percentages based on a normal serum C-reactive protein level. J. Formos. Med. Assoc. **106**, (2007).

26. de Labry, L. O., Campion, E. W., Glynn, R. J. & Vokonas, P. S. White blood cell count as a predictor of mortality: results over 18 years from the Normative Aging Study. J. Clin. Epidemiol. **43**, (1990).

27. Grimm, R. H., Neaton, J. D. & Ludwig, W. Prognostic importance of the white blood cell count for coronary, cancer, and all-cause mortality. JAMA **254**, (1985).

28. Harris, W. S. & Von Schacky, C. The Omega-3 Index: a new risk factor for death from coronary heart disease? Prev. Med. **39**, 212–220 (2004).

29. Harris, W. S., Del Gobbo, L. & Tintle, N. L. The Omega-3 Index and relative risk for coronary heart disease mortality: Estimation from 10 cohort studies. Atherosclerosis **262**, 51–54 (2017).

30. Harris, W. S. The omega-3 index as a risk factor for coronary heart disease. The American Journal of Clinical Nutrition vol. 87 1997S–2002S (2008).

31. Fernández-Friera, L. et al. Normal LDL-Cholesterol Levels Are Associated With Subclinical Atherosclerosis in the Absence of Risk Factors. J. Am. Coll. Cardiol. **70**, 2979–2991 (2017).

32. Andersson, C. et al. Long-term risk of cardiovascular events across a spectrum of adverse major plasma lipid combinations in the Framingham Heart Study. Am. Heart J. **168**, 878–83.e1 (2014).

33. Benatar, J. R. & Stewart, R. A. H. Cardiometabolic risk factors in vegans; A meta-analysis of observational studies. PLoS One **13**, e0209086 (2018).

34. Madsen, C. M., Kamstrup, P. R., Langsted, A., Varbo, A., & Nordestgaard, B. G. (2020). Lipoprotein(a)-Lowering by 50 mg/dL (105 nmol/L) May Be Needed to Reduce Cardiovascular Disease 20% in Secondary Prevention: A Population-Based Study. Arteriosclerosis, thrombosis, and vascular biology, 40(1), 255–266. https://doi.org/10.1161/ATVBAHA.119.312951

REFERENCES

35. Vasquez, N., & Joshi, P. H. (2019). Lp(a): Addressing a Target for Cardiovascular Disease Prevention. Current cardiology reports, 21(9), 102. https://doi.org/10.1007/s11886-019-1182-0

36. Marston, N. A., Giugliano, R. P., Melloni, G., Park, J. G., Morrill, V., Blazing, M. A., Ference, B., Stein, E., Stroes, E. S., Braunwald, E., Ellinor, P. T., Lubitz, S. A., Ruff, C. T., & Sabatine, M. S. (2022). Association of Apolipoprotein B-Containing Lipoproteins and Risk of Myocardial Infarction in Individuals With and Without Atherosclerosis: Distinguishing Between Particle Concentration, Type, and Content. *JAMA cardiology*, 7(3), 250–256. https://doi.org/10.1001/jamacardio.2021.5083

37. Visseren, F., Mach, F., Smulders, Y. M., Carballo, D., Koskinas, K. C., Bäck, M., Benetos, A., Biffi, A., Boavida, J. M., Capodanno, D., Cosyns, B., Crawford, C., Davos, C. H., Desormais, I., Di Angelantonio, E., Franco, O. H., Halvorsen, S., Hobbs, F., Hollander, M., Jankowska, E. A., ... ESC Scientific Document Group (2021). 2021 ESC Guidelines on cardiovascular disease prevention in clinical practice. *European heart journal*, 42(34), 3227–3337. https://doi.org/10.1093/eurheartj/ehab484

38. Masson, W., Siniawski, D., Lobo, M., Molinero, G., Giorgi, M., & Huerín, M. (2015). Association between LDL-C, Non HDL-C, and Apolipoprotein B Levels with Coronary Plaque Regression. *Arquivos brasileiros de cardiologia*, 105(1), 11–19. https://doi.org/10.5935/abc.20150050

39. Ference, B. A., Kastelein, J., Ray, K. K., Ginsberg, H. N., Chapman, M. J., Packard, C. J., Laufs, U., Oliver-Williams, C., Wood, A. M., Butterworth, A. S., Di Angelantonio, E., Danesh, J., Nicholls, S. J., Bhatt, D. L., Sabatine, M. S., & Catapano, A. L. (2019). Association of Triglyceride-Lowering LPL Variants and LDL-C-Lowering LDLR Variants With Risk of Coronary Heart Disease. *JAMA, 321*(4), 364–373. https://doi.org/10.1001/jama.2018.20045

ADDITIONAL RESOURCES

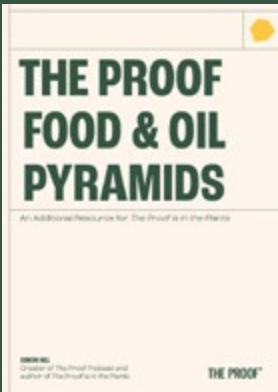# ADDITIONAL RESOURCES TO SUPPORT THE PROOF IS IN THE PLANTS

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Everyday and performance supplements supported by science that you may want to consider to compliment your plant-based diet.

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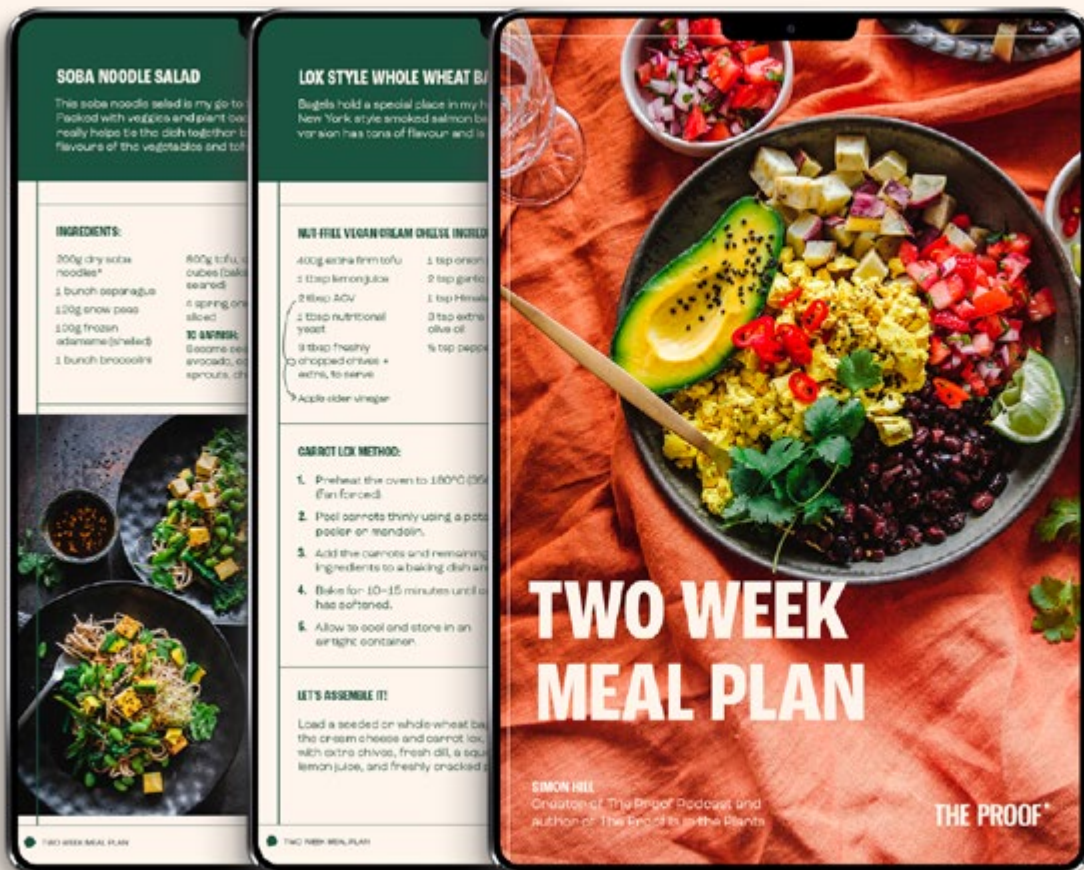Tools to help you track your progress as you adopt a plant-based approach.

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