

# Melanie Avalon

## paleo - intermittent fasting - wine

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# The Fasting-Mimicking Diet: Eat Your Way Through A Long Fast?



FASTING LONGEVITY

STUDIES

By melanieavalon / March 8, 2017

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*MAJOR UPDATE! I had the utmost honor of interviewing Dr.*

Longo on *The Intermittent Fasting Podcast*, and even got to ask him his thoughts on people generating their own versions of the FMD, like I discuss here! Check out *Episode 57* of the *Intermittent Fasting Podcast* for all the details!

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*Recent research indicates a Fasting-Mimicking Diet (FMD) may reap the astounding health, immune, and longevity benefits of an extended fast, while eradicating any perceived difficulties of fasting for multiple days. So: can you actually eat your way through a fast?*



Sometimes I feel like a poser in the fasting world.

Despite 6 years straight of only eating one meal at night, *I've never fasted more than a day*. I just have to have my nightly feast. Of course, daily intermittent fasting is profoundly therapeutic on its own, reaping a myriad of cleansing, age-boosting, health promoting, disease-preventing, restorative benefits. (For a ton of specific benefits, check out my last post, [26 Reasons To Try Intermittent Fasting!](#)). That said, longer fasts may extend the benefits even more. Is there a way to still eat, and reap the benefits of an extended, multi-day fast?

Quite possibly!

Meet Valter Longo: director of the Longevity Institute at USC (Fight on!), and a superstar in the fasting research world. His area of expertise includes the molecular pathways of aging and stress resistance, and he's published a multitude of studies on the benefits of calorie restriction, prolonged fasting and intermittent fasting. He's also has been analyzing the effect of **fasting-mimicking diets (FMD)** in mice and humans, with some pretty shocking results! Rather than using actual complete fasting, these very low calorie, high fat, very low protein, low carb diets nourish the body with micronutrients while still maintaining the cleansing and rejuvenating benefits of the completely fasted state - evident by similar glucose, ketone, and growth factor levels associated with longevity and stress resistance. This effectively allows for the therapeutic potential of an *extended* fast, without the deprivation and burden associated with fasting for multiple days on end.

For humans, the fasting-mimicking diet ends up looking like a **5 day regimen of (proprietary) plant-based soups, bars, drinks, and snacks**, as well as **chamomile tea** and a **vitamin supplement**. **Day 1 provides 1,090 calories of 10% protein, 56% fat, and 34% carbohydrate, while the following days yield 725 calories of 9% protein, 44% fat, and 47% carbohydrate.** Studies on the diet have revealed a multitude of body composition and health benefits.

? = unknown \* = use with caution, minimally or in moderation

**VEGETABLES**

VEGGIES	FODMAPS	SCD	Gaps	Cedars-Sinai
Alfalfa	Low: 1/2 cup	?	Full Gaps	No
Artichoke: French	High: 1 whole	Legal	Full Gaps	?
Artichoke: Jerusalem	High: 1/2 whole	Illegal	Avoid	?
Arugula	Low: 1 cup	Legal	Full Gaps	No
Asparagus	High: 2 spears	Legal	Stage 3: cooked	No
Avocado	High: 1/2 whole	Legal	Stage 3	?
Bamboo Shoots	Low: 1 cup	Legal	?	No
Bean Sprouts	Low: 1/2 cup	Illegal	Avoid	?
Beans: Green	Low: 12 beans	Legal	Stage 3	?
Beet	High: 4 slices	Legal	Legal	Yes
Bok Choy	Low: 1 cup	Legal*	Stage 1	No
Broccoli	Low: 1/2 cup	Legal	Stage 1: without stalks, cooked Stage 6: full, raw or cooked	No
Brussels Sprouts	Low: 2 sprouts	Legal	Full Gaps	No
Cabbage: Green	Low: 1 cup	Legal*	Stage 3: cooked Stage 5: raw	No
Cabbage: Red	Low: 1 cup	Legal*	Stage 3: cooked Stage 5: raw	No
Carrot	Low: 1 medium	Legal	Stage 1: cooked Stage 5: raw	Yes
Cauliflower	High: 1/2 cup	Legal*	Stage 1: without stalks, cooked Stage 6: full, raw or cooked	No

Chart compiled by Melanie Avalon, author of *The What When Wise Diet: Paleo And Intermittent Fasting For Health And Weight Loss* - [melanieavalon.com](http://melanieavalon.com)

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## FASTING-MIMICKING DIET (FMD) BENEFITS

### Fasting-Mimicking Diet For Health And Longevity

A 2015 study on the fasting-mimicking diet revealed a plethora of health and longevity benefits. The researchers first established that prolonged fasting extends lifespan of yeast cells, and protects them from toxicity (by more than 100 fold from hydrogen peroxide poisoning!). These benefits occurred even *without* the typical stress response transcription factor associated with longevity.

The researched next moved on to mice. They found a four day FMD:

- encouraged **liver cell renewal** and **muscle regeneration** upon refeeding
- supported **autophagy** (the breakdown and recycling of old proteins in the body)
- discouraged **bone density loss**
- discouraged the formation, onset, and number of **tumors**

- protected against **inflammation** and even inflammatory skin conditions like dermatitis (personal past struggle there!)
- promoted **immune system regeneration** and created conditions favorable for the regeneration of other various systems **throughout** the body
- improved **balance** and **motor coordination**
- boosted short-term and long-term **memory**
- supported **neurogenesis**: the creation of *new* brain cells
- increased lifespan (though older mice fared better on four days of a slightly less severe, higher protein diet)

Pretty cool! Finally, the researchers moved onto humans (represent!). In a randomized trial over 3 months, 9 female and 10 males consumed their normal diet (the control group), while 7 females and 12 males completed three 5-day FMD cycles (one each month), with meals as discussed above. Those who implemented the FMD were highly compliant (insinuating it's doable!) and reported side effects to be very low and below mild. Not too shabby. They also found the FMD got easier after the first cycle.

In the human trials, the FMD:

- resulted in **weight loss** from fat specifically: trunk fat decreased and lean muscle increased
- reduced **blood sugar levels**, even after stopping the diet
- decreased **C-reactive protein** (a marker of inflammation in the body and risk factor for cardiovascular disease)
- reduced markers of **disease**
- increased markers of **regeneration**

As the researchers concluded, "*this study indicates that FMD cycles induce long- lasting beneficial and/or rejuvenating effects on many tissues, including those of the endocrine, immune, and nervous systems in mice and in markers for diseases and regeneration in humans.*"

# Fasting-Mimicking Diet For Autoimmune Conditions

**Immunoence** is the pretty term for the declination of the immune system with aging, and is associated with chronic inflammation and increased likelihood of infection and autoimmune diseases. Ya see, the immune system involves a vast network of cells which identify things in your body as either "self" or "not self." It starts in a small organ called the **thymus**, where "teacher" thymic epithelial cells release proteins of the body, teaching **T cells** (who are like policemen) to recognize these bodily proteins as friend, not foe. T cells which mess up and react to these self-proteins as invaders are eliminated, while those which understand the difference between friend and foe are released into the body to scour it for viruses and bacteria. When these T cells find these intruders, they release an attack, keeping you safe and healthy. Yey!

Except sometimes things go terribly wrong.

Sometimes the T cells which think proteins of the body are foes, are released into the body anyway! When this happens, you can get an *autoimmune* condition, in which the body begins attacking itself. It'd be like if there were some cops who thought people holding nail files (rather than, say, guns) were a threat. All of a sudden you'd have situation where nail salons would be attacked! Talk about a mess! In your body, this can manifest as things like the body attacking the pancreas' cells (leading to Type I diabetes), or perhaps your joints and cartilage (arthritis), as well as more common inflammatory responses like allergies.

So how does one erase the memory of confused T cells? Easier said than done. T cells don't really "forget," and the body often struggles to properly eliminate them, which is one reason autoimmune conditions are *so* hard to get rid of. However, the body's metabolic state and immune system are closely connected, so playing around with metabolism may provide a solution. T cells

actually favor glucose (sugar) for fuel to do their thing and greenlight the inflammatory attack mode. (Fun fact: cancer cells also rely primarily on glucose!) Fasting, however, creates a metabolic state dependent on fatty acids and ketones, rather than glucose, and therefore may effectively kill super active immune cells needing sugar to fuel their rampage. Fasting also encourages apoptosis throughout the immune system: programmed cell death. This particularly occurs with hyperactive T cells which are autoimmune in nature.

While brief spouts of fasting create the fatty acid and ketone dependent state, intermittent fasting is likely not long enough to eradicate the faulty T cells. Instead we must turn to elongated fasts, or alternatively, diets which create the metabolic "fasting" condition, even with food intake. These include the high fat, low carb ketogenic diet, as well this post's focus: the high fat, low calorie, low protein, low carb fasting-mimicking diet (FMD.) Studies on the FMD indicate it may not only kill the faulty T cells as discussed, but better yet, support *repair of any damage*, and even *encourage stem cell regeneration* upon refeeding. In other words, the FMD may lead to *new* T cells with no faulty memories of good and bad! And on top of all that awesomeness, fasting and the FMD also *decreases inflammation* and *discourages aging-related hormones and growth factors*, further supporting a prime state for the immune system to rejuvenate and function all for the better, with less likelihood of future autoimmune conditions.

## Fasting Mimicking Diet For Diabetes And Blood Sugar Control

Longo's most recent study (which spurred me to write this post) appeared on February 23rd, 2017 in *Cell* magazine, and revealed the fasting state's amazing therapeutic potential in regards to diabetes, blood sugar control, and insulin resistance. Diabetes is a big, unfortunate deal. Almost



30 million people in the US have the disease, which involves dysregulated blood sugar and the hormone insulin. Here's how it goes down....

When you eat, the hormone insulin is responsible for shuttling blood sugar and nutrients into cells. In **Type 1 Diabetes**, the body attacks the pancreas, leading to a lack of insulin production. No insulin = no nutrients received by the body = bad news. This mandates the use of supplemental insulin. **Type II Diabetes**, on the other hand, is sort of like the opposite: too *much* insulin. It occurs when cells grow resistant to insulin, and basically ignore it. As a result, the pancreas must produce more and more insulin to compensate, and can eventually wear out, leading to a situation similar to Type I diabetes. Either way, in both types of diabetes, insulin is *not* properly communicating with cells. (In Type I Diabetes, cells would kill for some insulin. In Type II Diabetes, they basically ignore it.)

Since the beta cells of the pancreas responsible for insulin production are incredibly slow to regenerate, diabetes (particularly Type I) is largely considered irreversible. (Your skin can regenerate and heal itself pretty fast, your pancreas... not so much.)

Longo's most recent study looked at the FMD in regards to these blood sugar issues. In the trials, the researchers compared normal diets vs. fasting-mimicking diets in mice given a drug to

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- reversed the resulting dangerous **blood sugar conditions** (hyperglycemia)
- reduced **inflammation**
- encouraged the **regrowth of new pancreatic cells**, leading to a reinstigation of proper insulin generation and blood sugar control
- **turned on genes** normally only active in developing unborn mice. Talk about literally starting

over from birth!

Similar gene and insulating-regulating results were found in human pancreatic cells. As the study concluded, "*A periodic short-term diet that mimics fasting modulates b-cell regeneration and promotes insulin secretion and glucose homeostasis with potential to treat both type 1 and type 2 diabetes.*"

## HOMEMADE FASTING MIMICKING DIET?

I hesitate to propose a real-foods alternative to the fasting-mimicking diet, as I'm not a doctor nor professional medical researcher, and don't want to give *any* intention that concocting one's own FMD would yield the beneficial results of the studies as discussed. That said, the official FMD used in the studies (**Prolon**) is a proprietary (aka: SECRET!) formula of packaged foods, only available through a doctor. This makes it a bit inaccessible. Furthermore, the website states those with gluten, soy, tomato, nuts, or any other similar allergies should not consume the product, which makes it a no-go in my book. Plus, I'm just really *not* a fan of processed and packaged foods. Like really.

So with that disclaimer, can one concoct their own version of the diet? I'd like to hope so. We do know some key guidelines for the diet: the meals are plant-based and fulfill the following caloric and macronutrient criteria:

- **Day 1:** 54% of normal calorie intake (1,090 calories): 10% protein, 56% fat, 34% carb
- **Days 2–5:** 34% of normal calorie intake (725 calories): 9% protein, 44% fat, 47% carb

These diets should be consumed once a month for 5 days, followed by 25 days of normal eating. In Longo's studies, 3 - 4 cycles are carried out. I'm assuming the amount of calories would be adjusted based on one's weight and/or BMI, though I'm not sure to what degree.

Some people have concocted their own list of homemade, whole-foods FMD recipes which satisfy these criteria. Check out <http://agingadvice.org/FMD-Recipes.html> for sample recipes. If you do want to attempt the FMD with these recipes, I recommend plugging your actual ingredients into [fitday.com](http://fitday.com), which will generate a nice pie chart of macronutrient ratios. You could also switch out ingredients for personal food allergies and preferences as needed, as long as you maintain the correct macronutrients and calories.

## WHY THE LOW PROTEIN?

You may be wondering why the fasting-mimicking diet contains so little protein, worrying about muscle loss on such a protocol. Have no fear! There's actually a good reason for the low calorie/low protein combination, instead of a low calorie/high protein combination. It has to do with the fasted state and *autophagy*.

Ya see, the fasted state naturally *protects* muscle mass and supports enhanced muscle growth upon re-feeding. (See [Is it Possible to Build Muscle on an Intermittent Fasting Plan?](#) for more on that!) If you think about it, it wouldn't make much sense if our bodies naturally stored food as fat for times of starvation... and then burned protein when we needed energy. Like really. That'd be the silliest system ever, and we probably would have died out as a species way before now. Thankfully, when the body enters an extended state of nutrient restriction, it burns *fat* for energy. Of course, it still needs protein for muscle synthesis, since muscle is broken down and rebuilt everyday. To that note, the body *does not* store excess protein. It also can't generate protein out of nothing. So it does something pretty smart...

In periods of protein restriction, the body instigates **autophagy**. This is where old, worn out proteins in the body, which needed to be kicked to the curb *anyway*, are broken down and

resynthesized into the protein the body needs. It's like cleaning out your inner gunk via recycling! So avoiding protein in the fasted state can actually give your body *more* protein... from within you!

That said, you must consume very little amounts of protein to instigate autophagy, since very low amounts (we're talking potentially mere *grams*) stop the process. So the low protein content of the fasting-mimicking diet actually assures your body jumpstarts the autophagy process to provide adequate protein during the fast, while cleaning you out and rejuvenating you to boot!

## MY THOUGHTS ON THE FASTING-MIMICKING DIET

At the expense of freaking out people who think I've already gone off the deep end with fasting, I sort of really want to try my own version of the fasting-mimicking diet. In fact, my entire dream last night consisted of me trying to convince family members of the therapeutic immune-system rejuvenation potential of the FMD in regards to autophagy, apoptosis, and stem cell regeneration. {Sigh} Needless to say, I'm *morbidly* (opposite pun intended) curious of this diet's potential. Plus, I literally cannot remember the last time I ate a meal without moderate animal protein. (It was likely before my low carb days, which means at least 7 years ago.) So that could be quite telling. I just feel like the whole FMD could be a vastly illuminating and rejuvenating experience, with the potential to hardcore heal my gut and kick any autoimmune conditions to the curb!

On another note, the whole concept *does* sound similar to the ketogenic diet, just a low protein-version. (Although actually, this is more in line with the original medical ketogenic diet which prescribes moderate protein; popularization of the diet has lead to a higher protein version.) The

macronutrients of FMD diet however, are notably higher in carbs than most ketogenic diets, despite apparently creating a ketogenic state. This also makes me intrigued to try it, especially given my more recent flirtation with a higher carb Paleo approach. That said, I do wonder if one could skew the fat ratio slightly higher compared to carbs, while keeping protein intake the same.

Lastly, the whole fasting-mimicking diet concept makes me reconsider my thoughts on fat during the fasted IF state, something I've researched and pondered at length. For health benefits, perhaps fat intake during a fast doesn't always halt the fasted state (although I'm still not sure.) In any case, while I don't recommend ingesting massive amounts of fat during fasting for weight loss, (since you'll burn that fat, rather than your body fat) perhaps one *can* consume ample fat while fasted during weight maintenance, and maintain fasting's health benefits.

In any case, if I do attempt my own version of the FMD, I shall definitely report back! And as a final thought, it's probably a good thing I didn't become fasting obsessed till the end of college: I probably would have become a crazy Valter Longo fangirl and been kicked off campus 😊

*How about you? What are your thoughts on the fasting-mimicking diet?*

## REFERENCES

*Fasting-Mimicking Diet Promotes Ngn3-Driven  $\beta$ -Cell Regeneration to Reverse Diabetes:* [http://www.cell.com/fulltext/S0092-8674\(17\)30130-7](http://www.cell.com/fulltext/S0092-8674(17)30130-7)

*A periodic diet that mimics fasting promotes multi-system regeneration, enhanced cognitive performance and healthspan:*

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4509734/>

*Reduced levels of IGF-I mediate differential protection of normal and cancer cells in response to fasting and improve chemotherapeutic index:*

<https://www.ncbi.nlm.nih.gov/pubmed/20145127>

*Can autophagy promote longevity?:* <http://www.nature.com/ncb/journal/v12/n9/full/ncb0910-842.html>

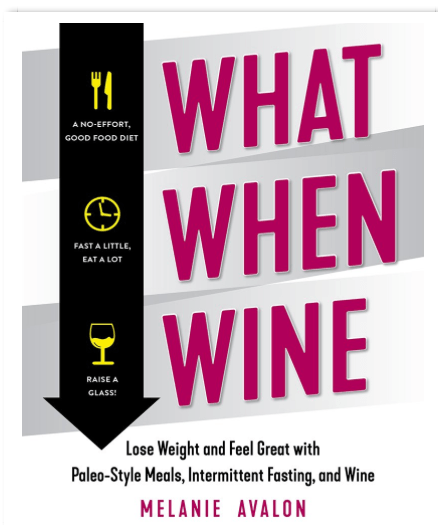
*Nutrition and fasting mimicking diets in the prevention and treatment of autoimmune diseases and immunosenescence:*

<https://www.ncbi.nlm.nih.gov/pubmed/28137612>

*Prolonged fasting reduces IGF-1/PKA to promote hematopoietic-stem-cell- based regeneration and reverse immunosuppression:*

[http://www.cell.com/cell-stem-cell/abstract/S1934-5909\(14\)00151-9](http://www.cell.com/cell-stem-cell/abstract/S1934-5909(14)00151-9)

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