

Mostly Harmless

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You Should be Working.

How I Stopped Eating Food

by rob



Food is the fossil fuel of human energy. It is an enormous market full of waste, regulation, and biased allocation with serious geo-political implications. And we're deeply dependent on it. In some countries people are dying of obesity, others starvation. In my own life I resented the time, money, and effort the purchase, preparation, consumption, and clean-up of food was consuming. I am pretty young, generally in good health, and remain physically and mentally active. I don't want to lose weight. I want to maintain it and spend less energy getting energy.

I hypothesized that the body doesn't need food itself, merely the chemicals and elements it contains. So, I resolved to embark on an experiment. What if I consumed only the raw ingredients the body uses for energy? Would I be healthier or do we need all the other stuff that's in traditional food? If it does work, what would it feel like to have a perfectly balanced diet? I just want to be in good health and spend as little time and money on food as possible.

I haven't eaten a bite of food in 30 days, and it's changed my life.

The Experiment

There are no meats, fruits, vegetables, or breads here. Besides olive oil for fatty acids and table salt for sodium and chloride nothing is recognizable as food. I researched every substance the body needs to survive, plus a few extras shown to be beneficial, and purchased all of them in nearly raw chemical form from a variety of sources. The section on the ingredients ended up being quite long so I'll save that for a future post. The first morning my kitchen looked more like a chemistry lab than a cookery, but I eventually ended up with an thick, odorless, beige liquid. I call it 'Soylent'. At the time I didn't know if it was going to kill me or give me superpowers. I held my nose and tepidly lifted it to my mouth, expecting an awful taste.



It was delicious! I felt like I'd just had the best breakfast of my life. It tasted like a sweet, succulent, hearty meal in a glass, which is what it is, I suppose. I immediately felt full, yet energized, and started my day. Several hours later I got hungry again. I quickly downed another glass and immediately felt relief. The next day I made another batch and felt even better. My energy level had skyrocketed at this point, I felt like a kid again. But on day 3 I noticed my heart was racing and my energy level was suddenly dropping. Hemoglobin! I think, my heart is having trouble getting enough oxygen to all my organs. I check my formula and realize iron is completely absent. I quickly purchase an iron supplement and add it to the mixture the next day. I have to be more careful not to leave anything out.

On day 4 I noticed how much healthier my skin was. It's long been dry and rough, with splotches and red bumps but now it's soft, smooth and clear. Before I rarely had enough energy to go to the gym, but this day I had plenty so I decided to put the diet to the test. I'd been running off and on for several months, never able to do more than a mile straight, but this day I ran 3.14 miles non-stop. This is an irrational improvement.

My cravings and tastes closely matched with my needs. One day I accidentally put in a tablespoon of salt, rather than a teaspoon. I immediately noticed the mixture tasted unpleasantly salty. When I was deficient of iron I felt a strong craving for red meat. As I started running longer distances I craved more carbohydrates. After a week advertisements for fast food looked repulsive. All I crave is Soylent.

Week 2 was rough since I started experimenting with the proportions, trying to find the optimum amount of everything. When I was off I paid for it dearly, but I soon found just the right mixture.

The rest of the month went smoothly. It quickly became part of my routine and I didn't have to think or worry about it. I was fully expecting to crave traditional food, but I don't as long as I've had my Soylent. Hunger comes from two chemicals triggered by a lack of nutrients, ghrelin and leptin, as well as mechano-sensors in the stomach. If there's something in your stomach and all your nutritional needs are met you won't feel hungry. I feel full after drinking a single glass of Soylent and while the smell of Mexican food from the street used to drive me crazy, now I am unaffected. It's like finding a new partner you really care about. When all your needs are met, you don't have a desire to stray.

Results

Quantitative

I had my blood tested in two ways: complete blood count and chemical panel, and got a lipid panel near the end. This shows stuff like red/white blood cell counts, Na, K, P proportions, and more. The internist had to bill it as "testing for blood-borne diseases". She said a lot of providers do not support preventative care, which I thought was strange. I also monitored my heart rate, and bought a glucose meter to track my blood sugar (I'm not diabetic). I am 6'3" so my BMI was on the upper end of normal at the start. Remember I am not trying to lose weight here.

	Week 0	Week 1	Week 2	Week 3	Week 4
Weight (lbs)	204	196	192	188	191
Blood Work	report (pdf)			report (pdf)	
Max run	<1mi	3.5mi	5mi	6mi	7mi
Notes	low blood sugar, is this why I always elt tired?	one belt loop down	feel great	two belt loops down, blood work excellent	started getting chilly, added a few pounds

I wasn't able to get a lipid test until week 3 but my triglycerides and cholesterol are certainly low now. I have a family history of heart disease, but my risk is now well below average.

I also got my genome sequenced. Genetically, my body's response to exercise should be typical, along with my response to diet, though on average I should have a slightly higher BMI, consistent with my status before the experiment. My LDL cholesterol is subject to be slightly higher than average, while my HDL levels typical. Though this is only one case, it should be representative of most people since my diet and exercise genetics are typical. Some people can eat all they want and never gain weight, others can't shed pounds no matter how hard they try. The trick is in the genome, though both extremes are uncommon. 23andme is awesome!

Qualitative

I feel like the six million dollar man. My physique has noticeably improved, my skin is clearer, my teeth whiter, my hair thicker and my dandruff gone. My resting heart rate is lower, I haven't felt the least bit sickly, rare for me this time of year. I've had a common skin condition called Keratosis Pilaris since birth. That was gone by day 9. I used to run less than a mile at the gym, now I can run 7. I have more energy than I know what to do with. On day 4 I caught myself balancing on the curb and jumping on and off the sidewalk when crossing the street like I used to do when I was a kid. People gave me strange looks but I just smiled back. Even my scars look better.

My mental performance is also higher. My inbox and to-do list quickly emptied. I 'get' new concepts in my reading faster than before and can read my textbooks twice as long without mental fatigue. I read a book on Number Theory in one sitting, a Differential Geometry book in a weekend, filling up a notebook in the process. Mathematical notation that used to look obtuse is now beautiful. My working memory is noticeably better. I can grasp larger software projects and longer and more complex scientific papers more effectively. My awareness is higher. I find music more enjoyable. I notice beauty and art around me that I never did before. The people around me seem sluggish. There are fewer 'ums' and pauses in my spoken sentences. My reflexes are improved. I walk faster, feel lighter on my feet, spend less time analyzing and performing basic tasks and rely on my phone less for navigation. I sleep better, wake up more refreshed and alert and never feel drowsy during the day. I still drink coffee occasionally, but I no longer *need* it, which is nice.

Time

I used to spend about 2 hours per day on food. Typically I would cook eggs for breakfast, eat out for lunch, and cook a quesadilla, pasta, or a burger for dinner. For every meal at home I would then have to clean and dry the dishes. This does not include trips to the grocery store. Now I spend about 5 minutes in the evening preparing for the next day, and every meal takes a few seconds. I love order of magnitude improvements, and I certainly don't miss doing dishes. In fact I could get rid of the kitchen entirely, no fridge sucking down power, no constant cleaning or worrying about pests, and more living space. I just need a water source.

Money

Monthly I was spending about \$220 on groceries, and another \$250 eating out for lunch and the occasional dinner. The average american spends \$604/month on food, about half of which is groceries.^{1,2} As a percentage of income this is actually the lowest of any nation. Kenyans for example spend 45% of their income on food.³ I used to dream of one day being able to afford shopping at Whole Foods, but now it's irrelevant to me. Consuming only Soylent costs me about \$50/month, another order of magnitude improvement, and would be cheaper if I didn't need the energy for running every day. At scale the cost would be even lower.

The Quantified Diet

It's wonderful to have full visibility and control over what's going in to my body. Besides making food allergies irrelevant, it's trivial to increase or reduce consumption of a particular substance by a precise amount. I am hopeful diabetics could use this to control their blood sugar. I was able to control mine to within about 5mg/dL by varying carbohydrates and fiber. Starting a more intense workout routine? Increase protein and carbohydrates 20%. Want to lose some weight? Reduce fat consumption by 30% (don't eliminate it entirely!). Blood work shows potassium deficiency? Increase it by the precise amount required. In fact, unless you work on a banana plantation you're probably not getting the recommended

amount of potassium (3500mg is 9 bananas), and never have. Ever wonder what it would feel like if you did?

Social Implications

As any Instagram user knows, food is a big part of life. Food can be art, comfort, science, celebration, romance, or a reason to meet with friends. Most of the time it's just a hassle, though. Americans only eat out for 12% of meals. I think it would be nice to have a default, healthy no hassle meal. Similar to drinking water most of the time, but wine or beer when you're socializing. If you saved money on food at home you would have the freedom to go out more often.

I for one would not miss the stereotype of the housewife in the kitchen. Providing diverse, palatable, and nutritious meals for an entire family every day must be exhausting. What if taking a night off didn't mean unhealthy pizza or expensive take out? How wasteful society has been with its women! The endless hours spent cooking and cleaning in the kitchen could be replaced with socializing, study, or creative endeavors. And why beg children to eat vegetables? Soylent has every vitamin and mineral the body needs, and it's delicious.

To me diet always seemed to be a trade-off. Time, money, health: pick two. You certainly have the capability to be healthy, but it will cost you. What about the single mom, the poor student, struggling entrepreneur or artist, the unemployed, or the elderly? These people desperately need energy, and it's harder for them to be healthy than anyone else. Living on fast food and ramen is cheap and convenient, but unhealthy. Shopping at places like Whole Foods costs a fortune to many people and cooking healthy recipes takes practice and time. Cooking should be a hobby, like hunting. People used to hunt for survival, now they just do it for fun.

Global Implications

With Soylent you can be in peak mental and physical condition for less than \$2/day. Soylent does not spoil for months, does not require refrigeration, is easy to transport, cheap and environmentally friendly to produce, contains no pesticides, hormones, or preservatives, is trivial to prepare, without even requiring a heat source (though you do need clean water), does no harm to animals, and drastically lowers sanitation requirements. I almost forgot to mention, when everything going in to your body is diffused in to the bloodstream, you don't poop. I only have to remove a few grams of fiber from my system per week. I also noticed I was generating far less trash than before. The vast majority of personal refuse is food-related. Why else would the trash can always be in the kitchen?

Discussion

This is one case and it's only been a month, so it's early, but I'm certainly not stopping now. Also, every body is different and there may be long term effects so more data is necessary. However, I am consuming no toxins or carcinogens and I get all the nutrition and energy I need with about 1/3 the calories the average American consumes so I *hope* in the long term my longevity will be improved (caloric restriction has been shown to reverse the effects of aging in rodents)^{4,5} while lowering my risk of cancer and disease. If you would like to try this experiment as well please [contact me](#) so we can pool our results. It's fine to have a normal meal too, nutritional fundamentalists really irk me. The point is freedom, you don't *have* to. I started consuming Soylent exclusively just to test the effects. I see nothing wrong with eating traditional food as well, I just don't have much of a desire to. The only thing I missed was eating with friends. Now that 30 days are up I'm going to start doing that again. I only drink socially, and now I only eat socially.

I notice only now how much of this city is devoted to the stuff. Wherever you are I challenge you to find a search term for google maps that returns more results than "food". Travelling back home to the American south I am still shocked to see how prevalent obesity is. How many people still spend their lives just surviving, living to eat, and it's killing them? The food is eating us. I don't know how to change peoples' behavior, but now that I've discovered Soylent, I'm healthier than I've ever been, have more freedom with my time and money, and never have to worry about the stuff. Finally, I can have my cake and eat it too.

update: Getting way more responses than I can respond to individually, so I put up soylent.me. Please sign up and I'll hook you up.

[1] <http://www.cnpp.usda.gov/Publications/FoodPlans/2012/CostofFoodDec2012.pdf>

[2] <http://www.gallup.com/poll/156416/americans-spend-151-week-food-high-income-180.aspx>

[3] <http://www.motherjones.com/blue-marble/2012/01/america-food-spending-less>

[4] <http://onlinelibrary.wiley.com/doi/10.1111/j.1474-9726.2012.00825.x/abstract>

[5] [http://www.cell.com/molecular-cell/abstract/S1097-2765\(12\)00905-7#Summary](http://www.cell.com/molecular-cell/abstract/S1097-2765(12)00905-7#Summary)

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28 Responses to “How I Stopped Eating Food”

1.  [Alexander Kyte](#) says:
[February 14, 2013 at 3:28 am](#)

I would like to join you in this study. I am currently a college student. Could you provide me with a more in-depth analysis of the composition of Soylent? I'm a diabetic, and I've had success with a 'paleo' diet. I'd like to try this other extreme. Want more introspection into blood glucose levels?

[Reply.](#)

2.  *dude* says:
[February 14, 2013 at 3:30 am](#)

You ran Pi miles. Irrational improvement!

[Reply.](#)

3.  *Cheema* says:
[February 14, 2013 at 5:31 am](#)

I have for the longest time wanted something like this. Unlike many people I consider food a necessary evil. I hope your experiment is a success and an FDA approved commercial product comes out of this.

[Reply.](#)

4.  *andy* says:
[February 14, 2013 at 7:39 am](#)

Just wondering where and what form of chemical did you get? From what I know, potassium in its pure form is pretty reactive; and something like iron would be hard to dissolve in water in its pure form.

[Reply.](#)

-  *rob* says:
[February 14, 2013 at 8:51 am](#)

Excellent question. I use Potassium Gluconate, which is non-reactive. And I dissolve Iron Chellate in fat separately before adding it to the mixture.

[Reply.](#)

5.  *David* says:
[February 14, 2013 at 10:07 am](#)

Can you add food colouring? Soy lent Red, Yellow and Green?

I'd be interested if you had seriously pulled this off, but I find myself sceptical of the possibility. Surely human nutritional requirements are complex and require a huge variety of trace elements that can only come from eating complex foodstuffs?

[Reply.](#)

-  *rob* says:
[February 14, 2013 at 10:31 am](#)

I have the utmost respect for skepticism. You're right. Human nutritional requirements are complex, but finite. The list may be shorter than you expected, and I see no reason they have to come from food, which is mostly made of things that you don't need. http://en.wikipedia.org/wiki/Essential_nutrient.

[Reply.](#)

6.  *Shabda* says:
[February 14, 2013 at 10:11 am](#)

Soylent green is people.

[Reply.](#)

7.  *Andy* says:

[February 14, 2013 at 10:35 am](#)

Do you add fiber to Soylent? How does this affect your defecation?

[Reply](#)



o *rob* says:

[February 14, 2013 at 12:17 pm](#)

Yes it has fiber. Everything except the fiber is absorbed in to my bloodstream so I poop very little.

[Reply](#)



8. *Mind porridge* says:

[February 14, 2013 at 12:49 pm](#)

General question about the framing of this: I don't know anything about the history of nutrition and am wondering how we have come up with the list on Wikipedia? Presumably nutrition is as subject to revision and new discoveries as any other aspect of biological science. Is it not therefore possible that not all the stuff we need in food (or perhaps more particularly, the combinations we need it in) has been identified yet?

[Reply](#)



9. *Manuel Araoz* says:

[February 14, 2013 at 3:18 pm](#)

I am no nutrition expert (in fact I am surprised by how little I know about nutrition), but couldn't eating only Soylent totally wipe out your gut flora? (some bacteria will no longer be needed and die)

http://en.wikipedia.org/wiki/Gut_flora

[Reply](#)



o *Daniel* says:

[February 15, 2013 at 1:59 am](#)

I just asked him the exact same question.

[Reply](#)



10. *Myles* says:

[February 14, 2013 at 4:51 pm](#)

This is very interesting. Where can I get more information about this and is there a forum were everyone can collaborate?

[Reply.](#)



11. *artur* says:

[February 14, 2013 at 5:04 pm](#)

I just want to try it. when U will post some guide, what and how to prepare?

[Reply.](#)



12. *Matt* says:

[February 14, 2013 at 5:47 pm](#)

Have you noticed your tongue becoming smooth? I've heard people who go for long periods with no solid food start to get a smoother tongue.

If you go back to regular food anytime soon I'd be interested in hearing about how ou find the taste of it.

[Reply.](#)



13. *David* says:

[February 14, 2013 at 6:56 pm](#)

Very interesting article! I'd be interested in trying this myself. I do juice fasts from time to time and am curious to see how similar/different the two methods are.

[Reply.](#)



14. *Capi Etheriel* says:

[February 14, 2013 at 7:20 pm](#)

I find it wonderful that it's working out for you. I suppose most of what you're feeling comes from not eating, actually, although getting your vitamins in the right proportion certainly makes a lot of good. I've been through several experiments with diets, most of them resorting to simplifying the diet, and the best so far (for me) is 80/10/10 by Dr Graham. The book will resonate a lot, since you're doing something very similar: you're cutting away the crap we're used to eat and you're having a healthy dose of exercise. BTW, just as I believe it's the not eating that is doing you the best, I also believe the exercise is key to your diet. So keep up with that 😊

As a next step you might consider polyphasic sleep. It's another order of magnitude improvement. Not only do you get to be awake 22h/day, you also get a memory that's unbeatable. The only down side of polyphasic sleep is that you can't socially sleep, it requires the discipline to keep it up as clockwork. But think of what you could achieve.

[Reply.](#)



15. *FeedMeSoylent* says:

[February 14, 2013 at 8:52 pm](#)

Thank you for your post and for your endeavors with Soylent.

I live with a horrible chronic illness (Crohn's and associated maladies) and am on a ridiculous variety of medications (immune suppressants and cortical steroids).

Food is my enemy. Since I've had so many surgeries (bowel resections and other horrors) and taken these meds for such a long time, the side effects are becoming worse than the disease itself.

Every time I eat, I am gambling. Sometime the result is an obstructed bowel, which feels like an alien is trying to claw it's way out of my abdomen. Sometimes other horrible things happen that I won't describe.

I'd love to try Soylent. It would be absolutely fabulous to stop eating altogether. Would you be willing to sell me a few days worth? I am in Canada. (Eh!)

[Reply.](#)



16. *JJ* says:

[February 15, 2013 at 5:04 am](#)

I find this sentence on your pre-"Soylent" diet the most revealing of your post: "Typically I would cook eggs for breakfast, eat out for lunch, and cook a quesadilla, pasta, or a burger for dinner."

It seems to me you went from one extreme (a lack of concern for proper nutrition) to another extreme (a controlled study of essential nutrients in the human diet and their effect on your overall wellbeing).

Essentially, you started "eating" right and exercising and are now amazed at the results. Medical professionals and dieticians have been advocating exactly the kind of lifestyle change you underwent for decades now (just not to the same scientific precision) because of exactly the same benefits you've listed.

It's not hard to find thousands of testimonials online of people who changed their diet and lifestyle and report back exactly the same benefits that you've experience (youthful energy, clearer skin, whiter teeth, deep sleep yet waking up feeling refreshed, etc.).

My only concern with your experiment is that I would worry about the long term effects of getting the proportions wrong on trace and ultratrace nutrients.

So, while I commend your effort to focus on your health and wellbeing, I would stop short of saying you've found a revolutionary replacement for solid food that will cure world hunger and ignite the creative energies of American housewives.

[Reply.](#)



o *rob* says:

[February 15, 2013 at 8:17 am](#)

Before my diet was pretty typical of someone in my demographic, it's basically how all my friends eat. I watched it a little, avoiding all fast food, eating kale, avoiding trans fats, and exercising a couple times a week. I was not extremely unhealthy, but average. I am fully conscious of the fact that a tightly controlled healthy traditional diet probably has essentially the same effects. My point was it's a pain. It's possible to be healthy, but it's a massive expenditure of time, money, and self control. I just want to make it easy, and cheap. I resent that health is so strongly correlated with socioeconomic class. Maybe there are adverse long term effects, maybe the long term effects are positive. I think it's worth testing.

[Reply.](#)



17. *Ben* says:

[February 15, 2013 at 2:01 pm](#)

What's the different in this stuff and a comercial meal replacer, like Ensure?

[Reply.](#)

18. [How I Stopped Eating Food : Mostly Harmless / fozbaca's WordPress](#) says:

[February 15, 2013 at 6:03 pm](#)

[...] <http://robrhinehart.com/?p=298> [...]

[Reply.](#)



19. *Peter* says:

[February 15, 2013 at 8:23 pm](#)

I would be interested to hear how this works without the carbohydrates. If you have given up on the positive aspects of eating them then I don't see any reason not to go fully ketogenic.

[Reply.](#)



o *rob* says:

[February 16, 2013 at 2:06 am](#)

I think that would be a very bad idea. The brain can only metabolize glucose for energy. Clinicians seem to be mostly in agreement that a fully ketogenic diet is unhealthy and dangerous.

[Reply](#)



20. *Adele* says:

[February 15, 2013 at 8:45 pm](#)

I was wondering if anyone here knows exactly what differences there are in nutritional requirements for women, and whether there would be interest for a female version.

[Reply](#)



21. *Steve* says:

[February 15, 2013 at 9:10 pm](#)

Tell me, what is the benefit of drinking this that I cannot acquire from a typical multivitamin? Obviously multivitamins don't contain much carbs, fat or protien.

[Reply](#)



o *rob* says:

[February 16, 2013 at 2:04 am](#)

Most multivitamins I looked at are also typically lacking in essential nutrients like Vitamin D, phosphorous, calcium, iron, potassium, and others.

[Reply](#)

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