

Soylent (food substitute)

Soylent is a food substitute intended to supply all of a human body's daily nutritional needs, made from powdered starch, rice protein, olive oil, and raw chemical powders.

Soylent was designed by software engineer Rob Rhinehart as a way to get all the nutrients needed by the body without the time, money, and effort that usually goes into preparing food. Lacking background in chemistry or nutrition, Rhinehart developed the formula by reading web sites, textbooks, and papers in scientific journals, and by self-experimentation. He named it after a fictional food from the novel *Make Room! Make Room!*



A homemade batch of Soylent, immediately after preparation

Soylent is currently undergoing on-going testing and modification. As of October 2013, a crowdfunding campaign has provided roughly US\$1,500,000, and venture capitalists (Andreessen Horowitz) provided another US\$1,500,000, to produce and market a commercial version of Soylent. The funding paid for additional research and modification of the formula, which delayed Soylent's launch date. Rosa Labs, the company that owns Soylent, estimates January 2014 for the first shipment of U.S.-based orders, and mid-2014 for international orders.

Ingredients

Below are the ingredients used initially in the manufacture of Soylent after 30 days of experimentation. Many are not readily available and must be ordered from laboratory supply stores.

- Carbohydrates (400 g), in the form of oligosaccharides such as maltodextrin
- Protein (50 g), in a powdered form such as rice protein
- Fat (65 g), in the form of olive oil
- Sodium (2.4 g), from table salt
- Potassium (3.5 g), in the form of potassium gluconate
- Chloride (3.4 g), also from table salt
- Fiber (5 g)
- Calcium (1 g), in the form of calcium carbonate
- Iron (18 mg), from an iron chelate
- Phosphorus (1 g), from monosodium phosphate
- Iodine (150 µg)
- Magnesium (400 mg)
- Zinc (15 mg)
- Selenium (70 µg)
- Copper (2 mg)
- Manganese (2 mg)
- Chromium (120 µg)
- Molybdenum (75 µg)
- Vitamin A (5000 IU)
- Vitamin B6 (6 µg)

- Vitamin C (60 mg)
- Vitamin D (400 IU)
- Vitamin E (30 IU)
- Vitamin K (80 µg)
- Thiamin (1.5 mg)
- Riboflavin (1.7 mg)
- Niacin (20 mg)
- Folate (400 µg)
- Biotin (300 µg)
- Pantothenic acid (10 mg)

Extras not considered essential:

- Lycopene (500 µg)
- Omega-3 fatty acids (750 mg)
- Ginseng (50 µg)
- Ginkgo biloba (100 µg)
- Lutein (500 µg)
- alpha-Carotene (140 µg)
- Vanadium (100 µg)

After three months changes were made to the ingredients. Half the maltodextrin was replaced with oat flour, and creatine, coenzyme Q10, and 2 g of sulfur from methylsulfonylmethane were added. The oat flour provides 40 g of fiber, and serves to provide energy after the initial "kick" from the maltodextrin. Because oat flour is not a raw chemical, adjustments were made to the amounts of other ingredients to compensate. Ethyl vanillin is added to make the drink more palatable.

Development process and health concerns

As of May 2013, Soylent has been tested by Rhinehart himself and by a handful of volunteers as well as individuals recreating the substance independently at home. Modifications to the ingredient list have occurred in response to results incurred in testing, for example: the first version of the formula omitted iron, which caused Rhinehart to report his heart had begun to race. In other early experiments, intentionally induced overdoses of potassium and magnesium gave Rhinehart cardiac arrhythmia and burning sensations. After the early recipe had stabilized, Rhinehart found himself suffering from joint pain due to a sulfur deficiency. Methylsulfonylmethane was added to address this problem.

Soylent in its present form may lack some nutrients essential for normal body functioning and/or may fail to provide nutrients in appropriate proportions, potentially causing medical problems if used long-term. Wikipedia:Identifying reliable sources The fundamental basis of the assumptions made by Soylent are disputed; with focus on the fact that, because digestion is a complex phenomenon and there is not a simple linear relationship between nutrient ingestion and nutrient absorption, many factors contribute to nutrient absorption in the human body.^[1]

With respect to the suitability of the product for general consumption, homemade Soylent is made without the kinds of regulatory safeguards and fine-tunings followed when making accepted artificial diets such as medical food.

Cost

In September 2013, Rhinehart said he would like to get Soylent down to a cost of US\$5 per day.^[2] As of April 2013, Rhinehart stated he was spending US\$154.62 per month on Soylent, yielding a diet of 2,629 kilocalories (11,000 kJ) per day while a medical food such as Jevity would cost US\$456 per month to get 2,000 kilocalories (8,400 kJ) and a family of four in the United States can purchase food for approximately US\$584 per month (avoiding eating out).

References

- [1] Campbell, T. Colin. *Whole: Rethinking the Science of Nutrition*. BenBella Books Inc, 2013.
- [2] Ars does Soylent, the finale: Soylent dreams for people | Ars Technica (<http://arstechnica.com/gadgets/2013/09/ars-does-soylent-the-finale-soylent-dreams-for-people/>)

External links

- Official website (<http://www.soylent.me>)
- Rob Rhinehart's blog (<http://robrhinehart.com/?p=298>)
- Rosa Labs (<http://www.rosalabs.com>) official web site
- List of Soylent recipes (<http://www.makesoylent.com/recipes>)
- "How I Ate No Food for 30 Days" (<http://motherboard.vice.com/blog/soylent-no-food-for-30-days>), *Vice* Motherboard, November 12, 2013

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