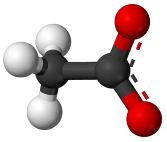
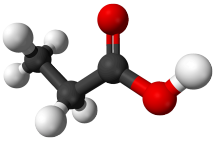
# Benefits of Dietary fibre

Short chain fatty acids (SCFAs) are naturally occurring metabolites produced by microorganisms in the healthy human gut. Gut microbes ferment indigestible fibre in the human diet to produce SCFAs. These in turn are absorbed in the human colon and can act as signalling molecules for our gut hormones and our immune system. They have been associated with a number of health benefits, including lowering obesity, and improving markers of type II diabetes and cardiovascular disease in humans.

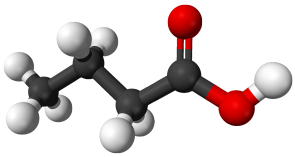
There are three main SCFAs - acetate, propionate and butyrate, which play differing roles in the regulation of the endocrine system. Acetate and propionate production has been associated with increased satiety, with propionate also lowering cholesterol. All three assist in maintaining a healthy mucosal layer in the human colon. This mucous layer can be stripped away by some emulsifiers found in processed foods with potential implications for leaky gut syndrome and associated inflammation in the body.



**Acetate**



**Propionate**



**Butyrate**

Investigations into the role of the gut microbiome in human health is an emergent field which, at present, has very few clinical trials published. Currently, the majority of data generated is observational in nature or from experiments in mice. This is a promising start, but the limitations of these early experiments trials include low enrolment, they are of short duration and the use of purified SCFAs as the trial drug. Future trials are anticipated that will provide a clearer picture of how humans can harness their gut microbes for optimal health. They would ideally have far more participants, eating dietary fibre, and followed for a number of years.

The early clinical trials were necessary to establish a causal link between SCFAs and the conditions they appear to improve. The design of these trials did occasionally cause side effects in a minority of people. This isn't particularly unusual with purified drugs and is unlikely to be observed in experiments using dietary fibre as the source of SCFAs. In these cases, a few people with non-alcoholic fatty liver disease, ulcerative colitis and depression reported a worsening of their primary symptoms. I contrast people who over consume dietary fibre merely report bloating and gas.

Animal studies using various sources of fibre have also shown promise. Resistant starch has been shown to alter gut bacteria with a corresponding statistically significant lowering of obesity and improvement of the gut mucosa - in mice. More helpfully, humans who consumed 980g of cooked green lentils every day for twelve weeks showed improvements in their cholesterol levels but not their blood sugars.

What can we do today to optimize SCFA production in our gut ? Weighing the balance of the evidence to both man and mouse, the prudent course of action would be to increase the amount of soluble and insoluble fibre in our diets. Nutritionists advise for a variety of fibre to be consumed every day. How much fibre does an adult human typically need ? Alternately (for all the carnivores out there), what is the minimum effective fibre dose, that will allow one to benefit from these compounds without pushing the steak off your plate ?

In the absence of good clinical data we must turn to epidemiology. There are a number of observational studies associating 25g of fibre/day with lower risk of diabetes, heart disease and some cancers. Of course, many studies have noted that 25 g/day is where the benefit begins, so by all means don't stop there. The US Food and Drug Administration recommends 28 g/day - assuming a 2000 kcal/day diet. Therefore, until better evidence arrives that would be a good place to start.

What does 28 g of fibre look like ? Any one of - 2 bowls of unsweetened high fibre cereal, 2 cups of most varieties of beans or chickpeas, or four cups of most berries should do it. Of course feel free to mix and match. A full list of fibre full foods can be found below

https://www.dietaryguidelines.gov/resources/2020-2025-dietary-guidelines-online-materials/food-sources-select-nutrients/food-0

The take home message ? Fibre is good for the microbial fermenters in your gut, and they are very good for you. Treat them well, feed them daily.

**Disclaimer**

*I am not a medical doctor and information presented here is not medical advice. Any changes you wish to make to your health should always be discussed with a Licensed Health Care Professional in your jurisdiction. Nothing presented here should be taken as an inducement to start or stop a medication. Any Lifestyle changes should first be cleared by your Medical Doctor. The information presented here is for educational purposes only, is general in nature and directed at a typical human being. It cannot account for any specific conditions that you may have.*

**Your doctor knows you, I don't.**

Cliff Dominy PhD
cndominyphd@gmail.com
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