The NiMe DIET

Scientific Principles and Recipes

Inspired by non-industrialized dietary habits

Developed and tested by scientists to restore the gut microbiome and improve health

Anissa M. Armet, PhD, RD
Jens Walter, Dr. rer. nat.

NiMe DIET

The **N**on-**i**ndustrialized **M**icrobiome restor**e** diet

(NiMe: pronounced Nee-Mee)

This book was developed by scientists at the University of Alberta, University College Cork, and APC Microbiome Ireland.

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Conceptualization, supervision, and resources – Dr. Jens Walter
Scientific content – Dr. Anissa Armet, Dr. Jens Walter
Recipe design and recipe testing – Dr. Anissa Armet
Props, food styling, recipe photography – Dr. Anissa Armet
Cover artwork – Charlotte Hintzmann
Scientific figures – Dr. Anissa Armet, Jessica Stanisich
Design and layout – Leticia Ramos da Silva
NiMe branding – The Vidacademy
Editorial managers – Victoria McMahon, Jessica Stanisich

Figures and infographics created using Biorender.

ISBN – 978-1-55195-528-5

Suggested citation –
Armet AM and Walter J. The NiMe Diet: Scientific Principles and Recipes. 2025.
doi: 10.7939/r3-yqya-qx91. https://pressbooks.openeducationalberta.ca/nimediet/

Download a free copy of this book online at:
https://doi.org/10.7939/r3-yqya-qx91

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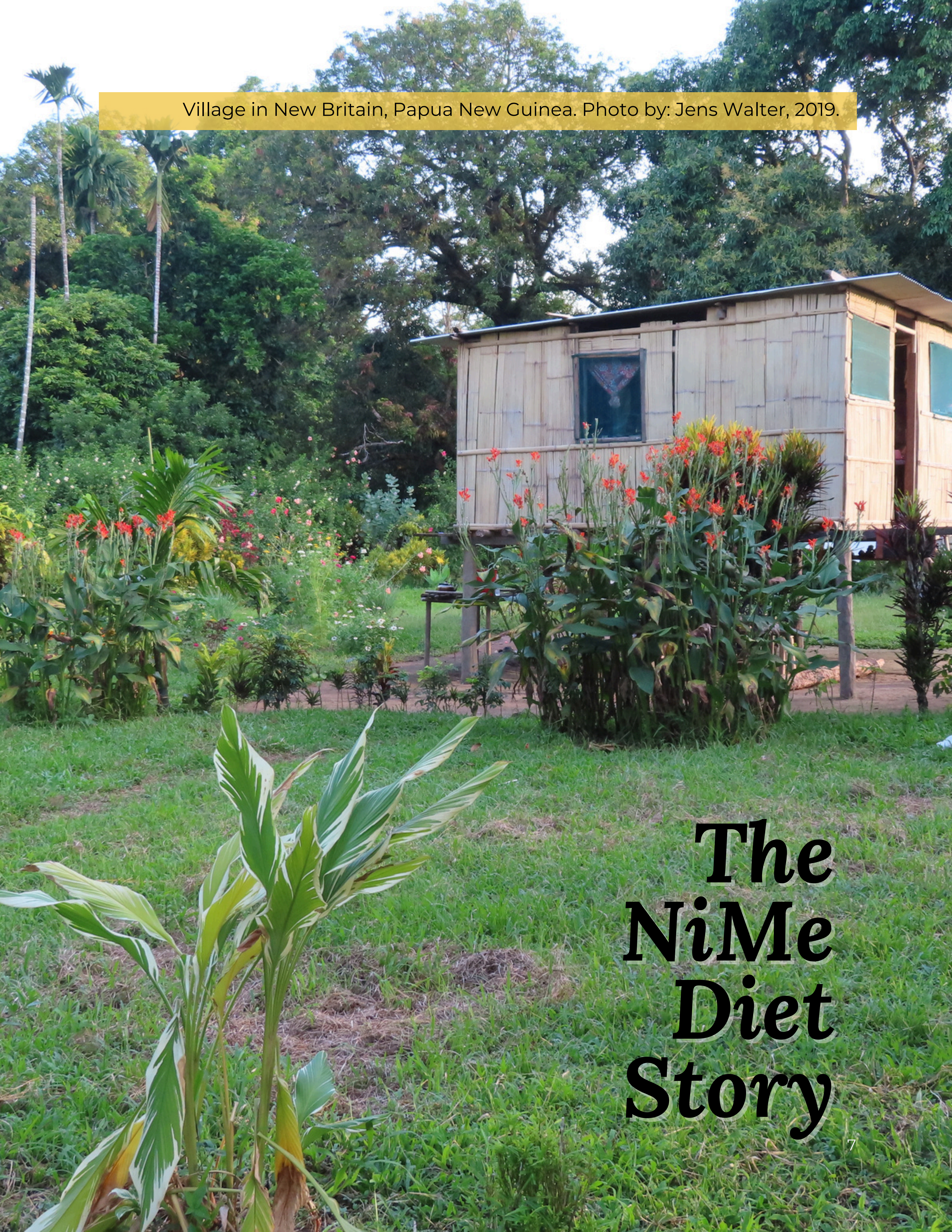


Village in New Britain, Papua New Guinea. Photo by: Jens Walter, 2019.

The NiMe Diet Story

The chronic disease crisis and its causes

Living in a modern, industrialized society certainly has advantages: infant mortality is low and life expectancy is high; sanitation and antibiotics prevent and fight infections; and modern industrialized food systems provide reliable access to food, including plenty of delectable delights.

Nevertheless, this abundance comes with a cost. The prevalence of several non-communicable chronic diseases – obesity, type 2 diabetes, heart disease, inflammatory bowel diseases, certain cancers (e.g., colorectal), and other immune-mediated diseases – has risen substantially. Although these diseases are quite different in their manifestations, they share inflammation as a common pathophysiological mechanism.

What is causing the rise in chronic diseases? It is not entirely clear. But what is clear is that it is not primarily genetics, as human genes have not changed enough over the last two centuries. It is, therefore, more likely that lifestyle-induced changes in industrialized societies are the key contributors. Central to this is a diet that has changed substantially due to industrialization and extensive food processing, which differs significantly from what humans consumed over the course of evolution.

Although food processing led to many advancements in food safety and security (like pasteurization and preservation techniques such as canning and freezing), the industrialization of food production resulted in a general reduction in the nutritional value of food. Many modern foods are energy-dense and oversupply fat and refined carbohydrates. So-called "ultra-processed" foods now make up the bulk of the diet in places like Canada, the USA, and the United Kingdom. Such foods are low in dietary fibre, have a high glycemic index (cause higher blood sugar spikes), and are designed to be highly palatable, leading to overeating, hyperglycemia, and systemic inflammation. Epidemiological evidence indicates that the foods that make up the "Western" diet are linked to the substantial rise in chronic diseases. Recent research has also established that such a diet has adverse effects on our gut microbiome.

The role of the microbiome in human health

The human gut microbiome, a complex community of bacteria, fungi, viruses, and other microbes that reside in our intestinal tract, plays an important role in human health and the prevention of chronic disease. Our relationship with the microbiome can be described as a "symbiosis", meaning it is mutually beneficial. We provide gut microbes with a home and food to eat and, in turn, the microbiome helps us fight infections, develop our immune system, and extract nutrients from our diet. Microbial metabolism produces hundreds of intermediates and products (metabolites) that are absorbed in the digestive system and circulated throughout the body. They influence and regulate bodily functions, including metabolism, immunity, and can even affect our mood. Production of these microbial metabolites is influenced by the nutrients we provide our microbes. In other words, our diet has a profound effect on the metabolic output of the gut microbiome and, consequently, our health.

It is important to consider that this symbiotic relationship with the gut microbiome evolved over millions of years under environmental and nutritional conditions that are substantially different from those in modern industrialized societies. This made scientists hypothesize that a disruption of human-microbiome symbiosis through industrialized lifestyle is one of the factors that led to the sudden rise in chronic diseases.

How does industrialization alter the gut microbiome? What are the consequences?

There is now convincing evidence that industrialization alters both gut microbiome composition and metabolic function. We can draw these conclusions by comparing gut microbiomes of non-industrialized human populations, such as Hadza hunter-gatherers in Tanzania and South American Amerindians, to those in industrialized settings. It is likely a combination of factors related to industrialization that alters our microbiome: antibiotics, sanitation, refined diets, and some modern clinical practices (like cesarean sections).

When it comes to functional attributes of the gut microbiome, diet is a central tenant. For example, without sufficient dietary fibre, the gut microbiome is essentially starved. This leads to reduced production of beneficial metabolites from fibre fermentation and increased degradation of the intestine's protective mucus layer. Artificial ingredients of processed foods like emulsifiers (added to enhance mouthfeel and prevent liquids from separating) further damage the mucus layer. Overall, this breakdown of the protective barrier in the gut causes inflammation, linking industrialized diets and resulting changes to the gut microbiome with increased chronic disease risk.

Some microbial taxa have disappeared entirely from the industrialized microbiome, and microbiome diversity has dropped. Pro-inflammatory microbial taxa that benefit from saturated animal fat (e.g., a bacterium called *Bilophila*) have increased, while fibre fermentation and its beneficial metabolites (e.g., short-chain fatty acids) have reduced. The enzymatic capacity of the gut microbiome for degrading plant carbohydrates is diminished, while mucus-degrading bacteria and enzymes are enriched. Several of these effects can be observed across generations of immigrants, meaning that if individuals from non-industrialized societies immigrate to an industrialized country, their microbiome is altered in parallel with the extent to which their lifestyle changes (or how long they have lived in an industrialized country).

Scientifically, it is very difficult to establish if such microbiome changes in humans do, in fact, cause the chronic pathologies with which they are associated. However, such work can be performed in animal models of human chronic diseases. There is ample research in animals confirming that perturbations of the gut microbiome that model the impact of industrialization, like Western-style diets, cause metabolic and immunological pathologies reminiscent of human chronic diseases.

Overall, mounting evidence suggests that lifestyle-induced adverse effects on the gut microbiome contribute to chronic disease risk.

The case for microbiome restoration

The research described above provides a strong rationale – supported by epidemiology, anthropology, and mechanistic animal model research – to restore the gut microbiome to redress adverse effects of industrialization. However, there are also voices that question such a need. After all, industrialization has made us live longer and, based on key societal health indicators, healthier overall. So, why try and restore the gut microbiome?

It is important to consider that the main benefits of industrialization are the prevention of infections and malnutrition through sanitation, antibiotics, and reliable access to food. These are very good things, and no one wants to get rid of them. However, it is equally important to understand the unintended, negative side effects. We have traded the reduced burden of infectious diseases with higher rates of chronic diseases. In addition, the incentive of food companies is to sell as much food as possible. Ultra-processed foods are designed to make us eat more by taking advantage of our own biology – reward systems in our brains favour food products high in fat and sugar because they evolved in an environment of food scarcity. Even non-industrialized populations, like Hadza hunter-gatherers, prefer to eat honey and meat when they are available over fibre-rich tubers that are more readily accessible.

Therefore, the idea is to explore how we can maintain the benefits of industrialization while avoiding its negative side effects – to get the best of both worlds! We can attempt to administer and reestablish beneficial microbes that have been lost, while still preventing pathogens from spreading. We can also try to make our food supply healthier and more microbiome friendly without jeopardizing food security.

Lessons from Papua New Guinea

Since Jens Walter was a child, he was fascinated by Papua New Guinea, with its more than 800 languages and remote valleys almost untouched by the modern world until 1930. The country is located on an island north of Australia and shares a border with Indonesia. Being unaffected by industrialization and maintaining an ancient system of subsistence agriculture, the traditional diet in rural Papua New Guinea is rich in unprocessed, whole-plant foods grown in personal gardens and sold in markets. On a trip to Papua New Guinea in 2019, Jens observed these gardens and markets for the first time, and began to understand how the non-industrialized diet could positively affect the microbiome and be harnessed to benefit health.

Local gardens growing food close to Goroka, Eastern Highlands province, Papua New Guinea. Photo by: Jens Walter, 2019.

Local market in New Britain, Papua New Guinea. Photo by: Jens Walter, 2019.

In collaboration with scientists from the Papua New Guinea Institute of Medical Research (PNGIMR), Jens' team discovered that the gut microbiomes of rural Papua New Guineans were more diverse than their industrialized counterparts, enriched in bacteria that thrive from dietary fibre (*Prevotella*) or originate from fermented foods (lactobacilli). There were also lower levels of pro-inflammatory bacteria linked to the consumption of saturated animal fat (*Bilophila* and *Alistipes*). These findings echo those of other studies that have shown that the industrialized lifestyle, particularly modern diet, leads to tractable changes in the gut microbiome.

In recent decades, however, many areas in Papua New Guinea have undergone a rapid transition to urbanization, marked by a shift from traditional, locally-sourced diets to ultra-processed foods and beverages. Although these changes have increased life expectancy and reduced levels of malnutrition, they led to a rapid increase in chronic diseases like type 2 diabetes. These detrimental side effects of industrialization on human health reiterate the need for countermeasures.

What is the NiMe™ diet?

Non-industrialized dietary patterns are complex and differ among populations and throughout human history. However, most share certain characteristics: they are low in energy-dense processed foods (high in added sugar, fat, and chemicals that damage the microbiome) and rich in vegetables, fruits, legumes, nuts, and seeds that provide dietary fibre in amounts that exceed what is currently recommended in dietary guidelines. Most non-industrialized human populations consume animal proteins, but often in lower amounts than plant-based foods.

Leveraging the microbiome research described above, we were determined to create a diet that mimics non-industrialized dietary habits to restore gut microbiomes, and that everyone could use to benefit their health:

The **N**on-**i**ndustrialized **M**icrobiome restor**e** diet,
or **NiMe**™ (pronounced *Nee-Mee*).

The scientific framework of the NiMe diet

The diet is based on a scientific framework informed by four pillars:

- **Evolution:** Humans and their microbiomes evolved together over millennia in a nutritional environment completely different than that of today. We considered the structural and compositional characteristics of food to create recipes that align more closely with the diet humans and their microbiomes consumed over the course of evolution, before the onset of industrialization.

- **Mechanisms:** We consider the mechanisms by which (i) food components and (ii) gut microbes and the compounds they produce in response to diet influence metabolic and immunological processes in the human body. We focus specifically on how changes in the structure and composition of food through industrialization alter the effects of diet on human biology and host-microbe interactions that underpin chronic pathologies.

- **Ecology:** The human gut microbiome is a diverse community of bacteria, fungi, viruses, and other microbes that interact with each other and produce compounds that are sensed throughout the human body. We consider how foods impact this complex ecosystem and its metabolic output, and how the industrialization and processing of foods have altered these interactions and disrupted the microbiome.

- **Nutrition:** Large observational studies have determined the long-term effects of diet on health, which, together with well-controlled intervention studies, have informed national food-based dietary guidelines. We draw on this well-established evidence base to inform the principles of the diet, as well as its recipes.

Here we provide examples on how to apply these four pillars to inform dietary recommendations, specifically for the cases of dietary fibre and dairy.

For dietary fibre, we can conclude that:

- Humans evolved consuming much higher amounts of dietary fibre than what is currently recommended (**evolution**)
- Fibre acts as growth substrates for gut microbes, and its fermentation influences microbiome function in ways that are likely beneficial (**ecology**)
- Fibre improves host-microbiome interactions, for example through immune-modulatory metabolites and reduced mucus degradation (**mechanisms**)
- The beneficial effects of fibre are well-established in the nutrition literature, with evidence suggesting that levels higher than 40 grams per day provide greater benefits to health (**nutrition**)

Thus, we recommend that the majority of one's diet is comprised of whole-plant foods to achieve dietary fibre levels of >40 grams per day.

For dairy, which has been a controversial topic in nutrition research and the history of dietary guidelines, we can conclude that:

- Humans did not consume milk, other than human milk, until a few thousand years ago. There is still a sizable portion of the global human population that does not consume dairy, and many people remain lactose intolerant. That being said, dairy was an important factor in human evolution in regions such as Europe and led to the emergence of lactase persistence as a genetic trait. There are, therefore, arguments for and against the consumption of dairy based on human evolution (**evolution**)

- Bile acids, levels of which are increased with higher levels of saturated fat intake from high-fat dairy, are transformed by the microbiome to secondary bile acids. These compounds are linked to inflammation and dysplasia (**mechanisms**)

- Milk fat enriches for the genus *Bilophila*, a pro-inflammatory bacterium, via the induction of bile acids. This has been observed in both animal and human studies (**ecology**)

- There is much research on the nutritional value of dairy, with both positive and negative effects reported. High-fat dairy is consistently discouraged in nutritional guidelines, while low- and normal-fat dairy are encouraged due to their healthier nutritive profiles (e.g., providing calcium, vitamin D, and protein) (**nutrition**)

Thus, we recommend a moderate intake of low- and normal-fat dairy (e.g., yogurt) while limiting high-fat dairy products such as butter, cream, and most cheeses.

The NiMe Diet Principles

The NiMe diet is a dietary pattern, which means that it is more important to think about all the different foods one eats and how they work together holistically to benefit health, rather than focusing on specific foods or nutrients in isolation. On the infographic on the next two pages, we present the plate of the NiMe diet, as well as the key principles. The focus is on what foods should be included, rather than excluded – in doing this, foods that are detrimental to health in high amounts will naturally be limited. We recommend following the principles of the NiMe diet (represented in the next two pages as a plate with detailed recommendations beside it) as much as possible, recognizing that it is difficult, and likely not necessary, to do this 100% of the time.

In addition to the principles listed on the next two pages, we suggest enjoying fermented foods as desired. They are often a component of non-industrialized dietary patterns, and may provide additional health benefits due to the provision of live microbes, microbially-derived metabolites, and microbially-transformed nutrients. However, nutrition research on the health benefits of fermented foods, especially with well-controlled human intervention trials, is in its infancy, and fermented foods were not included in the clinical validation of the NiMe diet (described later on in this book). Further, the NiMe diet principles also apply to fermented foods: avoid those with high amounts of added sugar, salt, or fat, as well as fermented processed meats or fermented high-fat dairy products.

Finally, we encourage you to seek out social connection with meals (eating with family and friends). As humans, we evolved to need social connection, and food within social gatherings and cultural events represents an integral part of non-industrialized lifestyles. Daily physical activity is as well – hunter-gatherers were (and still are) active for a large portion of the day. Not only does exercise provide benefits to cardiometabolic health, muscle health, and the microbiome, but it also improves our mental health.

NiMe™ Diet Plate

The proportions of different food groups, depicted on a plate, according to the NiMe diet. Vegetables and fruits (light green) make up the majority of one's diet, with smaller portions included of protein foods (light red; prioritizing plant-based proteins like legumes, nuts, and seeds, with smaller amounts of animal-based proteins like fish, poultry, and yogurt) and whole grains (light yellow).

The NiMe diet principles: recommendations for which foods should be included and which should be limited or avoided.

The NiMe diet compared to other dietary patterns

There are several dietary patterns with well-established health benefits. It is important to emphasize that we are not trying to do something radically different or revolutionary with the NiMe diet. The NiMe diet agrees in large part with several contemporary dietary guidelines (e.g., Canada's Food Guide and the Healthy Eating Plate by the Harvard School of Public Health) and dietary patterns such as the Mediterranean, Nordic, and DASH diets and, to a lesser degree, the Paleo diet. NiMe also draws inspiration from the NOVA classification of processed foods and the Planetary Health Diet. We consider such consensus in what constitutes healthy eating an advantage, as it allows individuals to choose among healthy dietary patterns which works best for them.

Nevertheless, the NiMe diet expands on other dietary frameworks, and places different points of emphasis based on the four scientific concepts described earlier (pg 18). Compared to almost all dietary guidelines and other dietary patterns, the NiMe diet recommends higher fibre intakes, which can be achieved by making the majority of one's diet vegetables, fruits, and legumes, with smaller portions of animal proteins and whole grains. This differs, for example, from the Mediterranean, Nordic, and DASH diets, which all recommend whole grains as the basis of one's diet (i.e., several daily portions). The NiMe diet further discourages cheese (e.g., with high fat percentages), which is a constituent of a Mediterranean diet and recommended in some dietary guidelines. The NiMe diet is also distinct from the Paleo diet, which suggests avoiding grains, legumes, dairy products, and starchy vegetables altogether, and which generally encourages much higher intakes of animal proteins.

How were the health effects of the NiMe diet validated?

Design of NiMe meal plan for research study

In 2017, Jens' research team at the University of Alberta started a project to test the effects of a microbiome restoration strategy by prescribing a diet that shared key characteristics of non-industrialized dietary patterns, as well as introducing a bacterium (*Limosilactobacillus reuteri*) that was detected in the fecal samples of rural Papua New Guineans but rarely found in industrialized microbiomes.

As a registered dietitian and avid foodie, Anissa Armet was already passionate about nutrition and how it affects the gut when she joined the Walter lab. Anissa's personal experience using a plant-based diet to successfully manage her ulcerative colitis, a form of inflammatory bowel disease, sparked her cognizance of how diet can radically impact health. In the lab, she got creative in the kitchen, creating and testing recipes inspired by Jens' research on rural Papua New Guineans that would appeal to a person used to typical Western dishes. These recipes would eventually form the meal plan of the NiMe diet intervention.

The NiMe diet intervention was designed to include certain foods either because (i) they were consumed by rural Papua New Guineans (e.g., beans, sweet potatoes, rice, cucumber, cabbage), or (ii) contained high amounts of raffinose and stachyose – fibres that promote the growth of *L. reuteri* in the gut (e.g., Jerusalem artichokes, peas, onions). Aligning with the four scientific principles introduced previously (evolution, ecology, mechanisms, and nutrition), the NiMe diet intervention was primarily composed of vegetables, legumes, fruits, and other whole-plant foods, resulting in daily fibre intakes of 22 grams per 1,000 calories – a daily average of around 45 grams. It contained one small serving of animal protein per day (salmon, chicken, or pork) and avoided highly processed foods. Dairy, beef, and wheat were excluded from the intervention because they are neither part of a traditional rural Papua New Guinean diet nor many other traditional diets in non-industrialized settings. These criteria allowed us to develop a meal plan that could be tested in a strictly controlled human intervention study in healthy adult participants in Canada.

Conducting a strictly controlled nutritional trial

There are several different ways to study the impact of diet in nutrition research. Some trials collect self-reported information on what people eat, while others counsel participants to follow a specific diet; nevertheless, these trial designs can provide highly unreliable results based on how accurately participants record their food intake or follow the diet of interest.

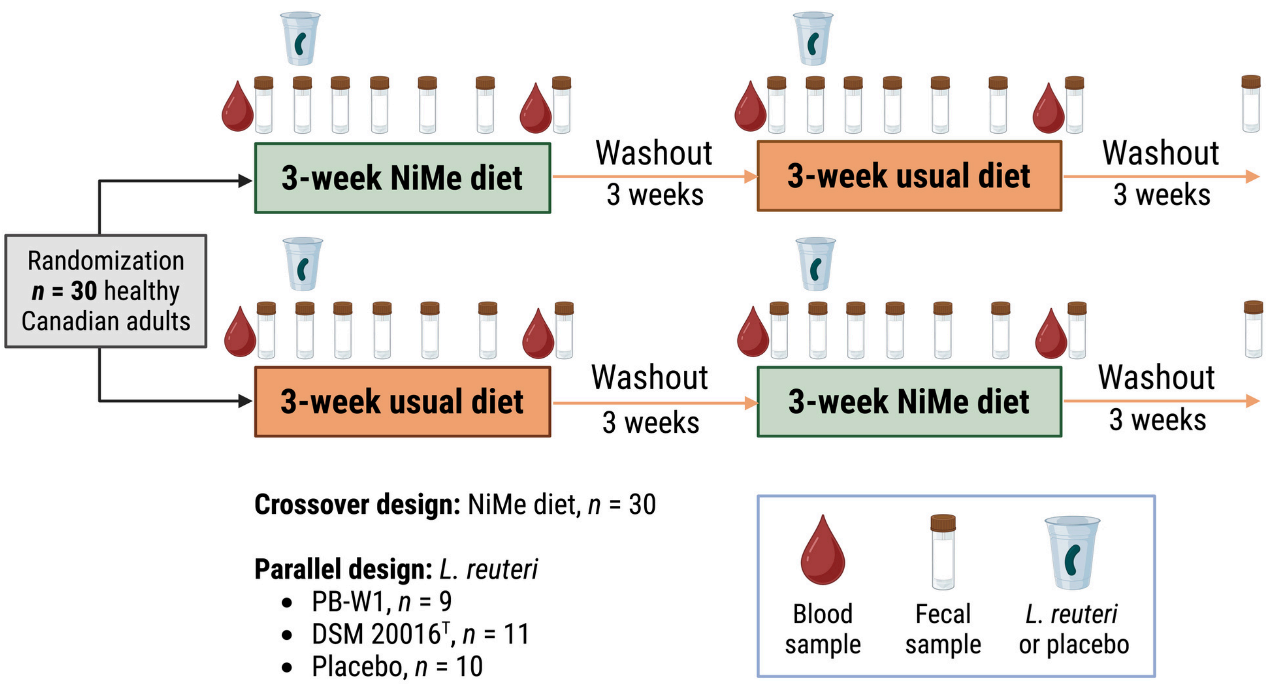
Anissa cooks NiMe meals in the metabolic kitchen (Human Nutrition Research Unit at the University of Alberta). Photo credit: University of Alberta.

Anissa (middle) provides meals from the NiMe diet intervention to participants in the trial (Human Nutrition Research Unit at the University of Alberta). Photo credit: University of Alberta.

Our goal instead was to conduct a strictly controlled feeding trial. This meant preparing the NiMe diet as precisely measured, standardized meals in a metabolic kitchen (Human Nutrition Research Unit at the University of Alberta) based on a four-day, rotating menu.

We then provided participants with all of their meals and snacks for a three week period.

The diet intervention was conducted as a crossover trial, meaning subjects were randomized to either stay on their usual diet or consume the NiMe diet for three weeks. After a three-week washout (no intervention), subjects were crossed over to the other diet period for three weeks, followed by a final three-week washout. In a parallel-arm design, participants were also randomized to receive a single dose of either *L. reuteri* PB-W1™ (strain derived from rural Papua New Guinean microbiome), DSM 20016ᵀ (type strain derived from industrialized microbiome), or a placebo on the fourth day of each diet period. The two different strains of *L. reuteri* allowed us to test whether differences in their geographical origin impacted their ability to survive and be re-established in the gut.



Study design of the human trial that tested a microbiome restoration strategy, consisting of a 'lost' microbe rarely found in industrialized microbiomes – *L. reuteri* – alongside the NiMe diet that shared key characteristics of non-industrialized dietary patterns.

Effects of the NiMe diet on fecal microbiome

We studied the effects of the microbiome restoration strategy on the gut microbiome composition (which microbes are there) and function (what those microbes do). The NiMe diet increased persistence (how long it stayed in the gut) and survival of *L. reuteri*, yet the species still disappeared just two weeks after participants received it, in all but one participant. Thus, *L. reuteri* had no effects on any outcomes in the study.

Generally, microbial diversity is a hallmark of a healthy gut microbiome. Unexpectedly, microbiota diversity decreased when participants consumed the NiMe diet. This shift was likely driven by changes to the gut environment (e.g., making the gut more acidic through fermentation and increased production of short-chain fatty acids). Lower microbiome diversity has also been observed in vegans, suggesting that a plant-rich diet may reduce microbiome diversity, at least in the short-term.

Many of the detected changes in the fecal microbiome altered by the NiMe diet are considered beneficial. For example, the diet increased the abundance of fibre-degrading microbes that can benefit health, like *Faecalibacterium*, *Lachnospira*, and *Bifidobacterium* species. At the same time, it reduced pro-inflammatory microbes that can be detrimental to health, like *Bilophila wadsworthia, Alistipes putredinis*, and *Ruminococcus torques*. These decreases in pro-inflammatory microbes were likely due to reduced consumption of saturated animal fat during the NiMe diet intervention.

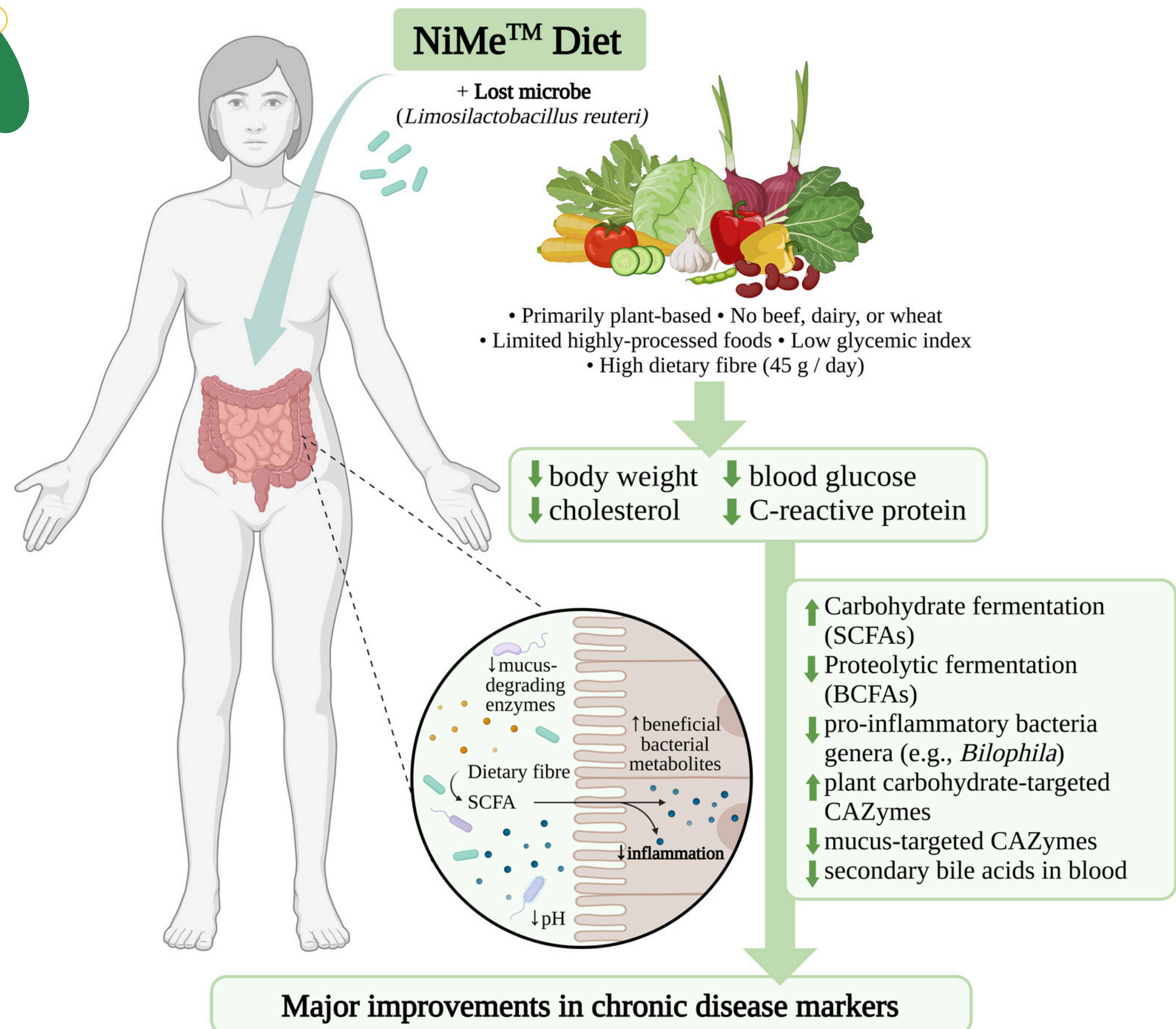
Effects of the NiMe diet on risk markers of chronic diseases and indicators of health

On a western diet low in dietary fibre, the gut microbiome degrades the mucus layer in the gut, which leads to inflammation. The NiMe diet prevented this pathological process, thus reducing inflammation. In addition, the diet increased beneficial bacterial metabolites in the blood, like indole-3-propionic acid, which has been shown to protect against type 2 diabetes and nerve damage.

Research also shows that low dietary fibre leads to gut microbes ramping up protein fermentation, which generates harmful byproducts that likely contribute to colon cancer. In fact, there is a worrying trend of increased colon cancer in younger people, which may be caused by recent trends toward high-protein diets. The NiMe diet increased carbohydrate fermentation at the expense of protein fermentation, and it reduced several metabolites linked to cancer, such as secondary bile acids and 8-hydroxyguanine.

We saw remarkable results, including weight loss (even though participants didn’t change their calorie intake), a drop in bad cholesterol (LDL) by 17%, decreased blood sugar by 6%, and a 14% reduction in C-reactive protein (a marker for inflammation and heart disease). Using machine learning (a form of AI), we found that these clinical benefits were linked to changes in the participants’ gut microbiomes, specifically microbiome features damaged by industrialization.

Summary of the results of the NiMe diet intervention trial:



The trial tested the effects of a microbiome restoration strategy – the NiMe diet combined with a lost microbe, *Limosilactobacillus reuteri* – on the gut microbiome and risk markers of chronic diseases. *L. reuteri* was not successfully reintroduced in all but one individual, and had no clinical effects from the one-time dose given. However, the NiMe diet significantly benefitted health (reducing body weight, blood glucose, cholesterol, and C-reactive protein), which was linked to improvements in several gut microbiome features negatively affected by industrialization.
BCFAs, branched-chain fatty acids; CAZymes, carbohydrate-active enzymes; SCFAs, short-chain fatty acids.

Outlook

The findings from our research demonstrate that a dietary intervention targeted towards restoring the gut microbiome can improve indicators of health and reduce risk markers of chronic diseases. This information can help individuals improve their nutrition, as well as aid healthcare professionals and policy makers to improve dietary recommendations.

The NiMe diet offers a practical roadmap for anyone interested in improving their health with nutritious meals that feed both our human bodies and our gut microbiomes. This book includes all the recipes that were clinically validated in a human nutritional trial. We will continue to update on our research and provide additional recipes through our social media pages (Instagram, Facebook, LinkedIn, X, and TikTok): **@nimediet**

Discover the full study here:

https://www.cell.com/cell/fulltext/S0092-8674(24)01477-6

Additional related educational materials

We invite you to check out these scientific articles we have written on diet and the gut microbiome:

- Li F, Armet AM, Korpela K, Liu J, Quevedo RM, Asnicar F, Seethaler B, Rusnak TBS, Cole JL, Zhang Z, Zhao S, Wang X, Gagnon A, Deehan EC, Mota JF, Bakal JA, Greiner R, Knights D, Segata N, Bischoff SC, Mereu L, Haqq AM, Field CJ, Li L, Prado CM, Walter J. Cardiometabolic benefits of a non-industrialized-type diet are linked to gut microbiome modulation. Cell. 2025. https://doi.org/10.1016/j.cell.2024.12.034
  - Clinical trial that tested the NiMe diet.

- Armet AM, Deehan EC, O'Sullivan AF, Mota JF, Field CJ, Prado CM, Lucey AJ, Walter J. Rethinking healthy eating in light of the gut microbiome. Cell Host & Microbe. 2022;30(6):764-785. https://doi.org/10.1016/j.chom.2022.04.016
  - Review on healthy eating and the gut microbiome.

- Martínez I, Stegen JC, Maldonado-Gómez MX, Eren AM, Siba PM, Greenhill AR, Walter J. The gut microbiota of rural Papua New Guineans: Composition, diversity patterns, and ecological processes. Cell Reports. 2015;11(4):527-538. https://doi.org/10.1016/j.celrep.2015.03.049
  - Research on the gut microbiome in rural Papua New Guinea.

Key published articles from other scientists that inspired our research:

- Ley RE, Hamady M, Lozupone C, Turnbaugh PJ, Ramey RR, Bircher JS, Schlegel ML, Tucker TA, Schrenzel MD, Knight R, Gordon JI. Evolution of mammals and their gut microbes. Science. 2008;320(5883):1647-1651. https://doi.org/10.1126/science.1155725
  - Shows that the evolution of mammals, microbiomes, and gastrointestinal anatomy is very much driven by diet.
- Blaser MJ and Falkow S. What are the consequences of the disappearing human microbiota? Nat Rev Microbiol. 2009;7(12):887-894. https://doi.org/10.1038/nrmicro2245
  - Describes the 'disappearing microbiota' hypothesis – that the loss of indigenous gut microbes has contributed to higher rates of allergic and metabolic diseases.
- Willett WC and Stampfer MJ. Current evidence on healthy eating. Annu Rev Public Health. 2013;34:77-95. https://doi.org/10.1146/annurev-publhealth-031811-124646
  - Reviews the evidence-base for key aspects of healthy eating.
- Sonnenburg ED and Sonnenburg JL. Starving our microbial self: the deleterious consequences of a diet deficient in microbiota-accessible carbohydrates. Cell Metab. 2014;20(5):779-786. https://doi.org/10.1016/j.cmet.2014.07.003
  - Summarizes research showing how low-fibre diets "starve" the microbiome, leading to a loss in microbiome diversity, increased inflammation, and higher risk of chronic diseases.
- Sonnenburg ED and Sonnenburg JL. Vulnerability of the industrialized microbiota. Science. 2019;366(6464). https://doi.org/10.1126/science.aaw9255
  - Discusses key factors of industrialized lifestyles that negatively influence the microbiome, and proposes strategies to address this.

Important resources on Papua New Guinea, and the impact of industrialization in this country:

- Davies A, Chen J, Peters H, Lamond A, Rangan A, Allman-Farinelli M, Porykali S, Oge R, Nogua H, Porykali B. What do we know about the diets of Pacific Islander adults in Papua New Guinea? A scoping review. Nutrients. 2024;16(10):1472. https://doi.org/10.3390/nu16101472
  - Review article on dietary habits of Papua New Guineans.
- Rarau P, Guo S, Baptista SN, Pulford J, McPake B, Oldenburg B. Prevalence of non-communicable diseases and their risk factors in Papua New Guinea: A systematic review. SAGE Open Med. 2020;8:2050312120973842. https://doi.org/10.1177/2050312120973842
  - Systematic review on the prevalence of chronic diseases in Papua New Guinea.

Important Notes

The recipes included in this book were used in a strictly controlled feeding trial, where they led to substantial reductions in risk markers of chronic diseases. However, the trial was only performed for three-weeks; we, therefore, do not know what the effects would be of consuming these recipes exclusively for a longer period of time.

The recipes excluded certain food groups, like dairy and wheat, in order to emulate the diet of many traditional, non-industrialized populations. These food groups provide essential micronutrients and we do not recommend excluding them completely without education and oversight by a registered dietitian.

A multi-vitamin was provided to participants in the feeding trial because the diet did not provide sufficient amounts of certain micronutrients (e.g., calcium, vitamin B12). If you choose to solely consume the recipes in this book for extended periods of time, we recommend a multi-vitamin supplement, as well as education and oversight from a registered dietitian.

The economic, sustainability, and environmental implications of these recipes were not key considerations during their development.

Nutritional Information and Modifications to Recipes

Nutritional information was derived from analyzing the recipes as written using a validated software (ESHA Food Processor®) in 2017 when the diet was first created. This information and the serving sizes in each recipe are meant to be used as a guide.

We encourage you to be flexible when making these recipes and use ingredients that are in season and available at your particular location. If the serving sizes or ingredients are adjusted, please note that the nutritional content of the recipes will be changed as well. We also encourage you to create your own meals and recipes inspired by the principles of the NiMe diet outlined in this book!

Meet the NiMe Diet Creators

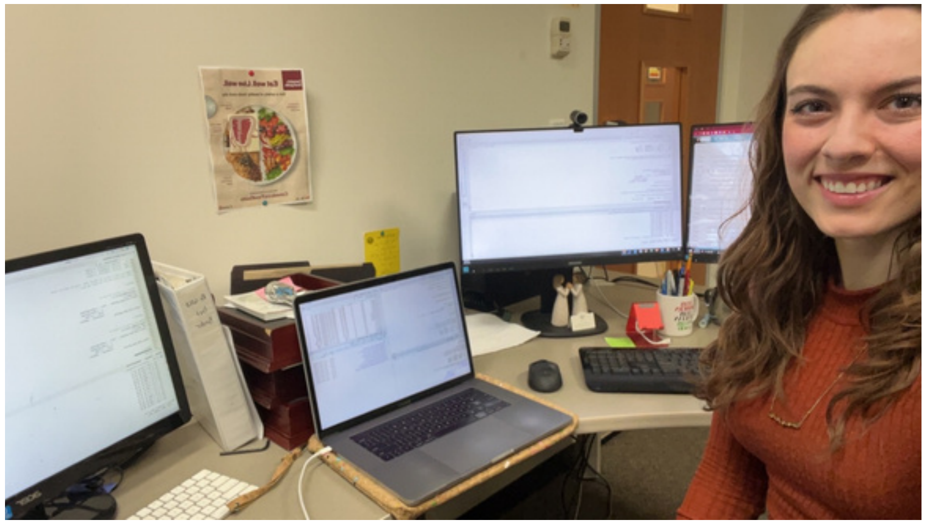
Anissa M. Armet, PhD, RD

Dr. Anissa Armet is a registered dietitian, and currently a postdoctoral researcher at the University of Alberta.

@anissa-armet

In 2017, Anissa was recruited to work in Jens Walter's lab as an undergraduate student to help design the research trial described in this book. Drawing on her nutrition expertise and personal experience in designing high-fibre plant-based recipes (posted on her Instagram account, @dashofnutrition, since 2014), Anissa created the recipes of the NiMe diet and contributed to the design of the controlled feeding trial.

In 2019, she began her PhD, supervised by Jens Walter, and was responsible for participant recruitment and data collection, cooking the NiMe diet, and data analysis. In her PhD, she used machine learning to determine if the gut microbiome predicts clinical responses to dietary interventions, contributing to the advancement of precision nutrition.



Anissa running machine learning models across three computers for her PhD thesis research at the University of Alberta (2023). Photo by: Anissa Armet.

Anissa cooking NiMe diet meals as part of the human intervention trial in the metabolic kitchen of the Human Nutrition Research Unit (HNRU) at the University of Alberta (2019).

After completing her PhD in March 2024, she transitioned into her current postdoctoral position to research the effects of microbiome-targeted dietary interventions in inflammatory bowel diseases (IBD). This research is particularly close to her heart, as Anissa herself has a type of IBD called ulcerative colitis. She has followed a dietary pattern similar to the NiMe diet for almost a decade to help manage her IBD. Anissa hopes to contribute to the advancement of using nutrition-based therapies to improve clinical outcomes for patients with IBD. Being equally passionate about knowledge translation, Anissa co-authored an award-winning, evidence-based cookbook – *The High-Protein Cookbook for Muscle Health During Cancer Treatment* – and is currently developing a plant-based version. She hopes you will enjoy the NiMe diet book and that it will help support your gut microbiome and overall health!

Meet the NiMe Diet Creators

Jens Walter, Dr. rer. nat.

Professor of Ecology, Food, and the Microbiome;
APC Microbiome Ireland, School of Microbiology, and Department of Medicine
University College Cork

@JensWalter15

Dr. Jens Walter serves as the Professor of Ecology, Food, and the Microbiome at University College Cork and the APC Microbiome Ireland. From 2014 to 2019, Jens served as Professor and Campus Alberta Innovates Program Chair at the University of Alberta (Edmonton, Canada), where he was the lead investigator of the scientific study on the NiMe diet described in this book. Jens' expertise lies at the interface of evolutionary ecology of the gut microbiome and human nutrition. He is interested in the evolutionary and ecological processes that shape host-microbiome interactions and the translation of basic microbiome science into therapeutic and nutritional strategies. Directly relevant to this book is Jens' research on the gut microbiome in rural Papua New Guinea on which the NiMe diet is based. Jens has published >180 peer-reviewed publications and is a 'highly cited researcher' according to Clarivate.

Jens almost dying of heat stroke on the way to climb tavurvur volcano in New Britain, Papua New Guinea. Photo by: Jens Walter, 2019.

There are several reasons why Jens is passionate about this book. It is important that the research, which was primarily funded through public sources and foundations, benefits as many people as possible. Jens also feels strongly about education and public outreach when it comes to nutrition.

Visiting a local village in New Britain, Papua New Guinea. Photo by: Jens Walter, 2019.

He hopes that this research will encourage individuals living in industrialized countries to eat healthier, as well as individuals that live in non-industrialized societies or are in transition to preserve their traditional dietary habits instead of adopting industrialized alternatives.

Out of sheer ignorance, Jens violated virtually every single principle of the NiMe diet in his younger years. Although he got away with this as a young adult, the combination of sports injury and poor diet contributed to substantial weight gain in the past. Following the principles of the NiMe diet has helped keep the kilos off, and he hopes that the information provided in this book will help others live healthier lives!

Acknowledgements

We would like to acknowledge the tremendous efforts of the many individuals that made critical contributions to the research featured in this book: Fuyong Li, Katri Korpela, Junhong Liu, Rodrigo Margain Quevedo, Francesco Asnicar, Benjamin Seethaler, Tianna Rusnak, Janis Cole, Zhihong Zhang, Shuang Zhao, Xiaohang Wang, Adele Gagnon, Edward Deehan, João Mota, Jeffrey Bakal, Russell Greiner, Dan Knights, Nicola Segata, Stephan Bischoff, Laurie Mereu, Andrea Haqq, Catherine Field, Liang Li, and Carla Prado. We would also like to thank the participants in this trial for their extensive involvement. We would further like to acknowledge the scientific institutions that allowed us to perform this research. The trial and participant clinical measures were completed at the Human Nutrition Research Unit, Department of Agricultural, Food & Nutritional Science at the University of Alberta (https://hnru.ualberta.ca/), while data analysis was performed at the University of Alberta, University College Cork, the APC Microbiome Ireland, and the institutions of our collaborators.

We would like to thank Victoria McMahon for coordinating the knowledge translation strategy for the research related to the NiMe diet, including this book. We also thank Jessica Stanisich for her help in producing scientific figures and editing this book.

We thank the University of Alberta Library, especially Michelle Brailey, for assistance in publishing this book open-access.

We acknowledge the Indigenous populations of rural Papua New Guinea, the Asaro and the Sausi, as well as other Indigenous groups in non-industrialized populations around the world, whose traditional dietary habits inspired our research and the development of the NiMe diet.

The University of Alberta respectfully acknowledges that we are located on Treaty 6 territory, a traditional gathering place for diverse Indigenous peoples including the Cree, Blackfoot, Métis, Nakota Sioux, Iroquois, Dene, Ojibway/ Saulteaux/Anishinaabe, Inuit, and many others whose histories, languages, and cultures continue to influence our vibrant community.

Menu of the NiMe Diet

The recipes included in this book were used in a strictly controlled feeding trial. This means that all meals and snacks of the NiMe diet were provided to participants based on their specific calorie (energy) requirements.

The following is the four-day, rotating menu used in the three-week NiMe diet intervention:

	Day 1	Day 2	Day 3	Day 4
Breakfast	• Rice Pudding	• Breakfast Hash	• Millet Porridge	• Sweet Potato and Black Bean Hash • Mandarin Oranges
Lunch	• Vegetable Gumbo • Canned Pears	• Green Pea Curry • Brown Rice	• Yellow Pea Soup • Artichoke Salad	• Quinoa Tabbouleh Salad • Canned Pears
Dinner	• Stir-Fry • Brown Rice	• Baked Salmon Fillet • Roasted Brussels Sprouts and Sweet Potatoes • Brown Rice	• Baked Chicken Breast • Mashed Jerusalem Artichokes and Potatoes • Green Peas and Carrots	• Baked Pork Tenderloin • Roasted Jerusalem Artichokes and Potatoes • Coleslaw
Snacks	• Raisins • Almonds	• Raisins • Almonds • Unsweetened Applesauce	• Canned Pears	• Almonds • Dried Apricots

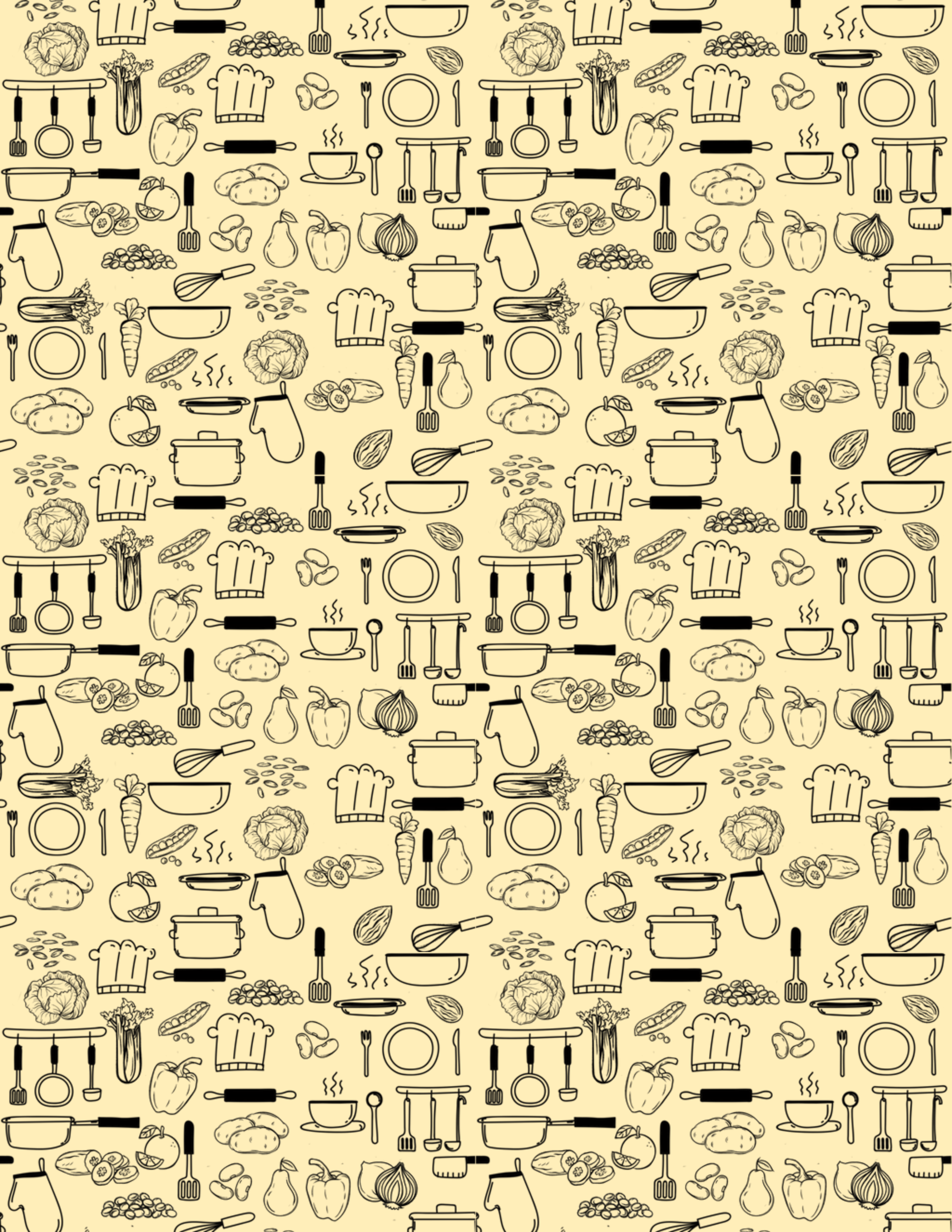
The picture shows the meals and snacks of Day 4 of the NiMe diet menu. Photo by: Anissa Armet.

The recipes included in this book are based on the serving sizes in the 2000-calorie increment of the NiMe diet. For a participant on this calorie increment, they would have consumed around 44 grams of dietary fibre daily.

Please be aware that these recipes are only practical examples of how to apply the principles of the NiMe diet, which can be adapted to incorporate many different traditional, cultural ingredients and seasonal foods. The serving sizes and/or ingredients of these recipes can be altered to suit your personal needs. For example, to make the dinner recipes plant-based, swap the animal proteins (pork, chicken, salmon) for beans, lentils, chickpeas, or tofu. The possibilities are virtually endless.

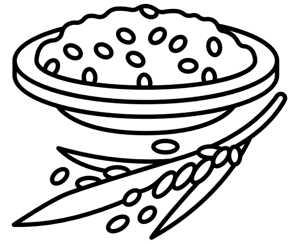
What sets the recipes in this book apart is that they were tested in a human intervention trial and resulted in substantial health benefits, providing a practical roadmap to easily apply the NiMe diet and improve health.

All recipes created by Anissa Armet.



Breakfast Recipes

Rice Pudding



Serves: 2

Nutritional Information Per Serving

Calories	Carbohydrate	Fibre	Protein	Total Fat	Saturated Fat
500 kcal	90 g	6 g	9 g	13 g	1.3 g

Ingredients

- 1 ½ cups (350 g) cooked brown rice*
- 1 ¼ cups (300 mL) unsweetened non-dairy milk
- 1 tsp (2 g) ground cinnamon
- 2 tsp (8 mL) vanilla extract
- ⅓ cup (60 g) raisins
- 2 Tbsp (40 g) honey or maple syrup
- ¼ cup (30 g) chopped walnuts

Directions

1. Add cooked rice, non-dairy milk, cinnamon, vanilla, raisins, and honey to a pot.
2. Bring mixture to a boil.
3. Once boiling, reduce heat to low and let the mixture simmer and thicken for ~10 minutes, stirring occasionally.
4. Once thickened to desired consistency, remove from heat and stir in walnuts. Serve warm.

***Note: If cooked brown rice is not on hand, combine 120 g (½ cup) uncooked brown rice with 250 mL (1 cup) water in a pot. Bring to a boil, then reduce heat to low and cook for 40 minutes with lid on. Once finished cooking, turn off heat and allow rice to steam for additional 10 minutes with lid on, then use cooked rice as directed above.**

Breakfast Hash

Serves: 2

Nutritional Information Per Serving

Calories	Carbohydrate	Fibre	Protein	Total Fat	Saturated Fat
325 kcal	57 g	5 g	7 g	9 g	0.7 g

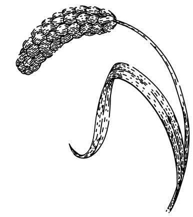
Ingredients

- 2 cups (300 g) Jerusalem artichokes, chopped
- 2 cups (300 g) russet potatoes, chopped
- 1 ½ Tbsp (23 mL) olive oil
- ½ cup (75 g) onion, chopped
- 1 tsp (2 g) salt
- ½ tsp (1 g) black pepper

Directions

1. Preheat oven to 400ºF.
2. Add all ingredients to a baking dish or casserole dish and stir well.
3. Bake for ~20 minutes. Remove from oven and stir well to ensure even baking.
4. Return to oven and bake for additional ~20 minutes, until potatoes are golden brown.

Millet Porridge



Serves: 2

Nutritional Information Per Serving

Calories	Carbohydrate	Fibre	Protein	Total Fat	Saturated Fat
385 kcal	60 g	5 g	9 g	11 g	1.0 g

Ingredients

- 1 ¾ cups (315 g) cooked millet*
- 1 ⅓ cups (330 mL) unsweetened non-dairy milk
- 1 ½ Tbsp (40 g) honey or maple syrup
- 2 tsp (8 mL) vanilla extract
- ⅓ cup (30 g) almonds, slivered

Directions

1. Place cooked millet, non-dairy milk, honey, and vanilla in a medium-sized pot. Stir to combine.
2. Bring mixture to a boil, then turn heat down to medium-low and cook until thickened, ~5-10 minutes.
3. Once thickened to desired consistency, remove from heat and stir in almonds. Serve warm.

***Note: If cooked millet is not on hand, combine ½ cup (100 g) uncooked millet with 1 cup (250 mL) water in a pot. Bring to a boil, then reduce heat to low and cook for 15 minutes, or until liquid has evaporated and millet is tender (add additional water as needed). Use cooked millet as directed above.**

Sweet Potato Black Bean Hash

Serves: 2

Nutritional Information Per Serving

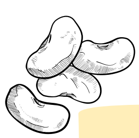
Calories	Carbohydrate	Fibre	Protein	Total Fat	Saturated Fat
440 kcal	64 g	16 g	14 g	15 g	2.1 g

Ingredients

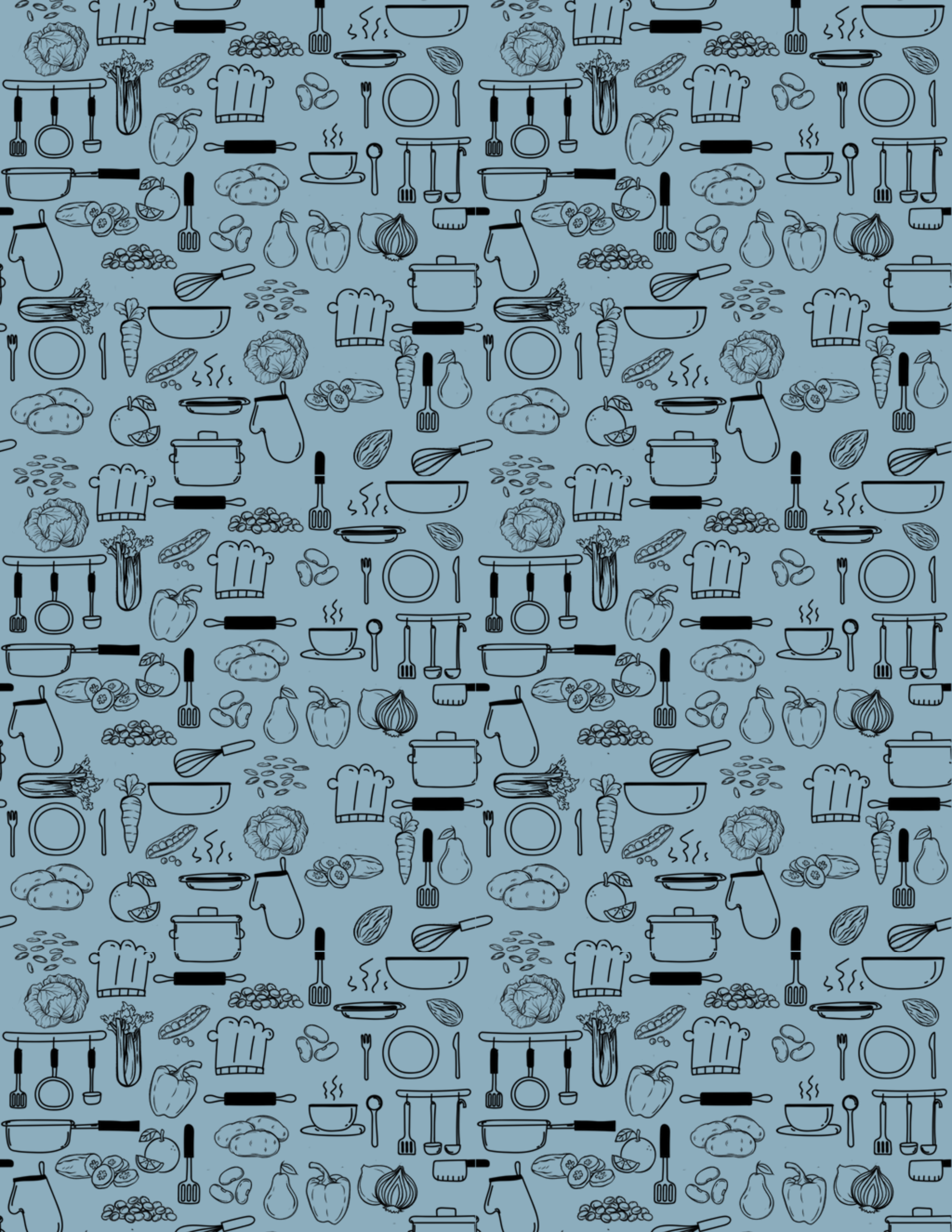
- 1 ⅓ cups (175 g) sweet potato, chopped
- 1 cup (135 g) red bell pepper, chopped
- ⅓ cup (45 g) onion, chopped
- 2 Tbsp (30 mL) olive oil
- 1 tsp (2 g) table salt
- ½ tsp (1 g) black pepper
- 1 tsp (2 g) garlic powder
- 1 tsp (2 g) paprika
- 1 ¾ cups (300 g) canned black beans, drained and rinsed
- ¾ cup (125 g) cooked millet*

Directions

1. Preheat oven to 400ºF.
2. Add sweet potato, red bell pepper, onion, olive oil, salt, black pepper, garlic powder, and paprika to a casserole dish lined with parchment paper. Mix well to coat vegetables with oil and spices.
3. Bake for 20 minutes, then remove from oven and toss vegetables to ensure even baking.
4. Bake for additional 10 minutes, then remove from oven and add black beans and cooked millet. Stir well to combine.
5. Cook for additional ~5-10 minutes, until vegetables are softened. Serve warm.

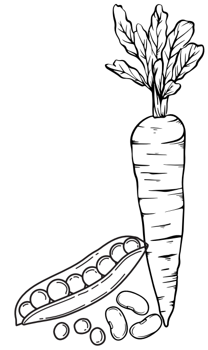


***Note: If cooked millet is not on hand, combine ¼ cup (40 g) uncooked millet with ½ cup (125 mL) water in a pot. Bring to a boil, then reduce heat to low and cook for 15 minutes, or until liquid has evaporated and millet is tender (add additional water as needed). Use cooked millet as directed above.**



Lunch Recipes

Bean and Vegetable Gumbo



Serves: 2

Nutritional Information Per Serving

Calories	Carbohydrate	Fibre	Protein	Total Fat	Saturated Fat
680 kcal	105 g	24 g	31 g	17 g	2.5 g

Ingredients

- 2 Tbsp (27 mL) olive oil
- 1 ⅓ cups (180 g) carrots, chopped
- 1 ¼ cups (120 g) celery, chopped
- ⅓ cup (55 g) onion, chopped
- 3 tsp (6 g) minced garlic (3-4 cloves)
- 1 ¼ cups (160 g) frozen green peas
- 3 cups (520 g) canned cannellini beans (white beans), drained and rinsed
- 1 tsp (2 g) low-sodium vegetable bouillon
- 1 tsp (2 g) salt
- ½ tsp (1 g) black pepper
- 1 tsp (2 g) dried oregano
- 2 cups (500 mL) water
- 3 ½ cups (115 g) fresh spinach
- 1 cup (185 g) cooked quinoa*

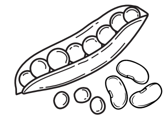
Directions

1. Heat olive oil in a large pot on medium heat.
2. Add carrots, celery, and onion and cook until tender, approximately 10 minutes.
3. Add minced garlic and cook for 1-2 minutes.
4. Add green peas, cannellini beans, bouillon granules, salt, pepper, oregano, and water. Stir to combine.
5. Cook mixture for 30 minutes. Add more water if the vegetables are not cooked through and the mixture is very thick.
6. Once mixture is thickened and vegetables are tender, stir in spinach and cooked quinoa and remove from heat. Serve warm.

***Note: If cooked quinoa is not on hand, combine ⅓ cup (60 g) uncooked quinoa with ⅔ cup (170 mL) water in a pot. Bring to a boil, then reduce heat to low and cook for 20 minutes with lid on. Once finished cooking, turn off heat and allow quinoa to steam for additional 10 minutes with lid on, then use cooked quinoa as directed above.**

Green Pea Curry

Serves: 2



Nutritional Information Per Serving

(Curry only, no rice)

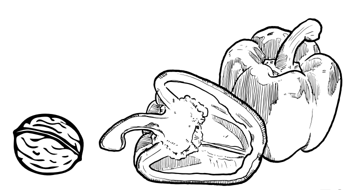
Calories	Carbohydrate	Fibre	Protein	Total Fat	Saturated Fat
800 kcal	107 g	26 g	39 g	27 g	10.4 g

Ingredients

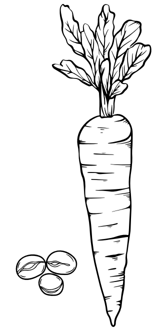
- 1 Tbsp (15 mL) olive oil
- ⅓ cup (50 g) onion, chopped
- ½ cup (85 g) red bell pepper, chopped
- 1 tsp (2 g) minced garlic (1-2 cloves)
- 1 tsp (2 g) curry powder
- ½ tsp (1 g) dried ginger
- 2 ⅔ cups (350 g) frozen green peas
- 3 ⅔ cups (650 g) canned cannellini beans (white beans), drained and rinsed
- 1 ⅓ cups (300 mL) lite coconut milk
- ½ tsp (1 g) salt
- 1 Tbsp (7 g) thickener of choice (e.g., soy flour, corn flour)
- ¼ cup (25 g) chopped walnuts

Directions

1. Heat olive oil in large pot on medium heat.
2. Add onions and red pepper and cook for ~10 minutes, stirring occasionally.
3. Add garlic, curry powder, and ginger and stir. Cook for ~2 minutes.
4. Add white beans and green peas and cook for ~5 minutes, stirring occasionally.
5. Add coconut milk and salt to pot.
6. Whisk thickener of choice with 3 Tbsp (45 mL) warm water, and add to pot. Stir to combine.
7. Cook for ~20-30 minutes, stirring occasionally. If mixture becomes too thick and starts to stick to bottom of pot, add ¼ cup of water at a time.
8. Remove from heat and add chopped walnuts. Serve with cooked brown rice.



Yellow Pea Soup



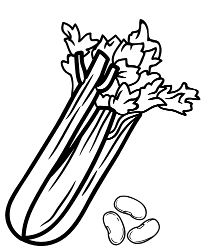
Serves: 2

Nutritional Information Per Serving

Calories	Carbohydrate	Fibre	Protein	Total Fat	Saturated Fat
720 kcal	111 g	18 g	41 g	15 g	2.1 g

Ingredients

- 1 ¼ cups (250 g) raw yellow split peas
- 2 Tbsp (30 mL) olive oil
- ½ cup (60 g) carrots, chopped
- ⅓ cup (35 g) celery, chopped
- 3 Tbsp (30 g) onion, chopped
- 1 ½ tsp (3 g) minced garlic (~2 cloves)
- 1 ⅓ cups (250 g) canned cannellini beans (white beans), drained and rinsed
- ½ tsp (1 g) low-sodium vegetable bouillon
- ½ tsp (1 g) salt
- ¼ tsp (0.5 g) black pepper
- ⅛ tsp (0.25 g) cayenne pepper



Directions

1. Using a strainer, rinse yellow split peas with cool running water.
2. Add rinsed peas to a large pot and fill with cold water until about 2” of water is above the peas.
3. Bring water to a boil and cook yellow peas on medium heat until softened, ~30-35 minutes. Once cooked, drain any remaining water and set aside.
4. While the split peas cook, add olive oil to another large pot and heat on medium-high heat.
5. Once oil is hot, add carrots, celery, and onion and cook for 10 minutes, stirring occasionally, until browned.
6. Add in garlic and cook for ~1-2 minutes.
7. Add the white beans, vegetable bouillon, salt, black pepper, cayenne, cooked yellow peas, and 600 mL water and stir well.
8. Simmer soup for ~30 minutes, until vegetables are softened.
9. Once vegetables are softened, if desired, use immersion blender to blend smooth. Serve warm, with artichoke and bean salad if desired.

Artichoke and Bean Salad

Serves: 2

Nutritional Information Per Serving

Calories	Carbohydrate	Fibre	Protein	Total Fat	Saturated Fat
210 kcal	31 g	8 g	10 g	6 g	0.9 g

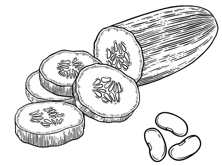
Ingredients

- 1 ¼ cup (200 g) canned cannellini beans (white beans), drained and rinsed
- ¾ cup (120 g) canned artichoke hearts, drained, rinsed, and chopped
- 2 Tbsp (20 g) onion, chopped
- 1 tsp (2 g) minced garlic (1-2 cloves)
- 1 Tbsp (15 mL) balsamic vinegar
- 1 Tbsp (15 mL) olive oil
- ½ tsp (1 g) salt
- ¼ tsp (0.5 g) black pepper

Directions

1. Add all ingredients to a large bowl and mix well.
2. Serve cold, with yellow pea soup if desired.

Quinoa Tabbouleh Salad



Serves: 2

Nutritional Information Per Serving

Calories	Carbohydrate	Fibre	Protein	Total Fat	Saturated Fat
410 kcal	64 g	12 g	17 g	10 g	1.4 g

Ingredients

- 1 ½ cups (270 g) cooked quinoa*
- 1 ½ cups (275 g) canned cannellini beans (white beans), drained and rinsed
- 1 cup (145 g) cucumber, chopped
- ⅓ cup (60 g) red bell pepper, chopped
- 2 Tbsp (15 g) green onions (tops and bulbs), chopped
- 1 tsp (2 g) dried parsley
- 2 Tbsp (30 mL) lemon juice
- 1 Tbsp (15 mL) olive oil
- ½ tsp (1 g) salt
- ½ tsp (1 g) black pepper

Directions

1. Add all ingredients to a bowl and mix well. Serve cold.

***Note: If cooked quinoa is not on hand, combine ½ cup (90 g) uncooked quinoa with 1 cup (250 mL) water in a pot. Bring to a boil, then reduce heat to low and cook for 20 minutes with lid on. Once finished cooking, turn off heat and allow quinoa to steam for additional 10 minutes with lid on, then use cooked quinoa as directed above.**

Dinner Recipes

Stir-Fry

Serves: 2

Nutritional Information Per Serving

(Stir-fry only, no rice)

Calories	Carbohydrate	Fibre	Protein	Total Fat	Saturated Fat
305 kcal	29 g	7 g	25 g	11 g	1.8 g

Ingredients

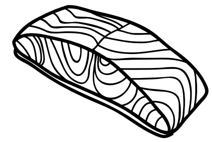
- 1 Tbsp (15 mL) sesame oil
- 6 oz (165 g) raw pork tenderloin, chopped into 1”-2” pieces
- 1 cup (125 g) carrots, chopped
- ¾ cup (80 g) celery, chopped
- ⅓ cup (50 g) onion, chopped
- ⅔ cup (100 g) Jerusalem artichokes, thinly sliced
- ½ cup (65 g) shiitake mushrooms, thinly sliced
- ¾ cup (105 g) frozen green peas
- 1 ½ tsp (3 g) minced garlic (~2 cloves)
- ½ Tbsp (10 mL) soy sauce
- ½ tsp (1 g) black pepper

Directions

1. Heat sesame oil on medium-high heat in large frying pan or wok.
2. When pan is hot, fry pork until browned evenly and internal temperature reads 71°C (160°F).
3. Remove the pork from the pan and set aside, leaving the remaining oil in the pan. Add additional oil if necessary.
4. Heat oil on medium-high heat and add the carrots, celery, onion, Jerusalem artichokes. Cook until vegetables are browned, ~15 minutes, stirring often.
5. Add in garlic and cook for ~1-2 minutes.
6. Add mushrooms and green peas and cook until mushrooms are browned, approximately 5-7 minutes.
7. Just before removing pan from the heat, add pork back in and stir in pepper and soy sauce.
8. Serve stir-fry with cooked brown rice.

Baked Salmon Fillet

Salmon Dinner



Serves: 2

Nutritional Information Per Serving (Salmon only)

Calories	Carbohydrate	Fibre	Protein	Total Fat	Saturated Fat
135 kcal	9 g	0 g	11 g	6 g	1.2 g

Ingredients

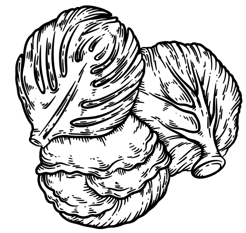
- 4 oz (95 g) fresh salmon fillet
- 1 Tbsp (20 mL) maple syrup
- 1 Tbsp (18 mL) soy sauce
- ½ tsp (1 g) minced garlic (~1 clove)
- ¼ tsp (0.5 g) black pepper

Directions

1. Preheat the oven to 400°F.
2. Prepare the marinade in a small dish: combine the maple syrup, soy sauce, garlic, and pepper.
3. Score the surface of the salmon with a knife, cutting ~ ¼ inch deep.
4. Place the salmon fillets in a shallow glass baking dish lined with parchment paper and coat with the marinade.
5. Place the baking dish in the preheated oven, and bake the salmon uncovered until the internal temperature reads 70°C (158°F), ~20 minutes.
6. Serve with cooked brown rice and roasted Brussels sprouts and sweet potatoes.

Roasted Brussels Sprouts and Sweet Potatoes

Salmon Dinner



Serves: 2

Nutritional Information Per Serving (Brussels sprouts only)

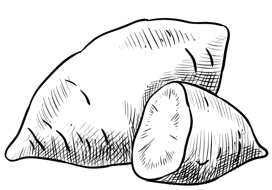
Calories	Carbohydrate	Fibre	Protein	Total Fat	Saturated Fat
120 kcal	17 g	5 g	3 g	5 g	0.8 g

Ingredients

- 1 ¾ cups (150 g) Brussels sprouts, cut in half lengthwise
- ¾ cup (100 g) sweet potato, peeled and chopped
- 2 tsp (10 mL) olive oil
- 1 tsp (2 g) minced garlic (1-2 cloves)
- ½ tsp (1 g) salt
- ¼ tsp (0.5 g) black pepper

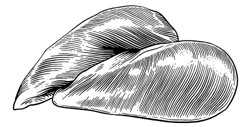
Directions

1. Preheat oven to 400˚F.
2. Add all ingredients to a casserole dish lined with parchment paper and stir well.
3. Place in preheated oven and bake for ~20 minutes.
4. After 20 minutes, take out and toss to ensure even baking. Bake for additional ~15-20 minutes until Brussels sprouts and sweet potatoes are browned and softened.
5. Serve with baked salmon fillets and cooked brown rice (e.g., ½ cup serving).



Baked Chicken Breasts

Chicken Dinner



Serves: 2

Nutritional Information Per Serving (Chicken only)

Calories	Carbohydrate	Fibre	Protein	Total Fat	Saturated Fat
135 kcal	1 g	0 g	14 g	8 g	1.3 g

Ingredients

- 4.5 oz (120 g) boneless, skinless chicken breast
- 1 Tbsp (15 mL) olive oil
- 1 tsp (2 g) salt
- ½ tsp (1 g) black pepper
- ½ tsp (1 g) garlic powder
- ½ tsp (1 g) onion powder
- ½ tsp (1 g) chili powder

Directions

1. Preheat oven to 400° F.
2. Place chicken in parchment paper-lined baking dish and coat it with the olive oil.
3. Mix salt, black pepper, garlic powder, onion powder, and chili powder together in a small bowl.
4. Sprinkle both sides of the chicken breasts with the spice mixture.
5. Bake chicken in preheated oven until internal temperature reads 74°C (165°F), ~20-25 minutes.
6. Serve with green peas and carrots and mashed potatoes and Jerusalem artichokes.

Mashed Potatoes and Jerusalem Artichokes

Chicken Dinner

Serves: 2

Nutritional Information Per Serving (Mashed potatoes and Jerusalem artichokes only)

Calories	Carbohydrate	Fibre	Protein	Total Fat	Saturated Fat
240 kcal	42 g	4 g	5 g	7 g	1.0 g

Ingredients

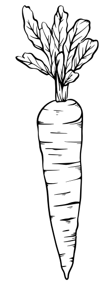
- 1 ½ cups (225 g) Jerusalem artichokes, cut into 1" pieces
- 1 ½ cups (225 g) russet potatoes, cut into 1" pieces
- ¼ cup (60 mL) unsweetened non-dairy milk
- 1 Tbsp (1 Tbsp) olive oil
- 1 tsp (2 g) salt
- ½ tsp (1 g) black pepper

Directions

1. Add Jerusalem artichokes and potatoes to large pot. Add enough cold water over to cover.
2. Bring water to boil. Boil until Jerusalem artichokes and potatoes are tender when pierced with knife, ~15 minutes.
3. Drain and place cooked Jerusalem artichokes and potatoes in a large glass bowl.
4. Add unsweetened non-dairy milk, olive oil, salt, and pepper to bowl.
5. Use an immersion blender or hand mixer to blend until smooth.
6. Serve with baked chicken breasts and green peas and carrots.

Green Peas and Carrots

Chicken Dinner



Serves: 2

Nutritional Information Per Serving (Green peas and carrots only)

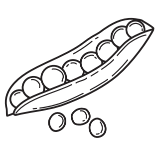
Calories	Carbohydrate	Fibre	Protein	Total Fat	Saturated Fat
150 kcal	20 g	6 g	5 g	6 g	0.8 g

Ingredients

- 1 Tbsp (15 mL) olive oil
- 3 Tbsp (30 g) onion, chopped
- 1 cup (120 g) carrots, chopped
- 1 ⅓ cups (180 g) frozen green peas
- ½ tsp (1 g) garlic powder
- ½ tsp (1 g) salt
- ¼ tsp (0.5 g) black pepper

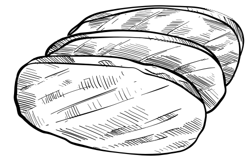
Directions

1. Heat olive oil in a large frying pan on medium-high heat.
2. Once the oil is hot, add the onion and carrot and cook until browned, ~7 minutes, stirring occasionally.
3. Add the green peas and cook for ~2-3 minutes, stirring occasionally.
4. Add garlic powder, salt, and black pepper, and stir well.
5. Cook for another ~5 minutes until, vegetables are tender.
6. Serve with baked chicken breasts and mashed potatoes and Jerusalem artichokes.



Baked Pork Tenderloin

Pork Dinner



Serves: 2

Nutritional Information Per Serving (Pork only)

Calories	Carbohydrate	Fibre	Protein	Total Fat	Saturated Fat
175 kcal	0 g	0 g	27 g	7 g	1.3 g

Ingredients

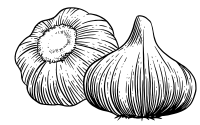
- 8 oz (245 g) raw pork tenderloin
- 1 Tbsp (15 mL) olive oil
- 1 tsp (2 g) salt
- ½ tsp (1 g) black pepper
- 1 tsp (2 g) garlic powder
- ½ tsp (1 g) dried oregano
- ¼ tsp (0.5 g) dried coriander

Directions

1. Preheat oven to 400˚F.
2. Place pork in baking dish lined with parchment paper.
3. Pierce pork with a fork all over and rub with olive oil.
4. Mix the salt, black pepper, garlic powder, oregano, and coriander in a small bowl.
5. Evenly coat both sides of the pork tenderloin with the spice mixture.
6. Bake pork in oven until internal temperature of 71ºC (160ºF) is reached, about ~30-35 minutes.
7. Serve warm with coleslaw and roasted potatoes and Jerusalem artichokes.

Roasted Potatoes and Jerusalem Artichokes

Pork Dinner



Serves: 2

Nutritional Information Per Serving

(Roasted potatoes and Jerusalem artichokes only)

Calories	Carbohydrate	Fibre	Protein	Total Fat	Saturated Fat
240 kcal	33 g	3 g	4 g	11 g	1.5 g

Ingredients

- 1 ¼ cups (180 g) Jerusalem artichokes, chopped into 1” pieces
- 1 ¼ cups (180 g) Russet potatoes, chopped into 1” pieces
- 2 Tbsp (30 mL) olive oil
- 1 tsp (2 g) minced garlic (1-2 cloves)
- 1 tsp (2 g) salt
- ½ tsp (1 g) black pepper
- 1 tsp (2 g) dried thyme

Directions

1. Preheat oven to 400˚F.
2. Add Jerusalem artichokes and potatoes to a large baking dish lined with parchment paper.
3. Add olive oil, minced garlic, salt, black pepper, and thyme to vegetables and mix well to coat.
4. Bake in preheated oven for 20 minutes, then remove from oven and toss vegetables to ensure even baking.
5. Bake for additional ~20 minutes, until vegetables are crispy.
6. Serve warm with pork tenderloin and coleslaw.

Coleslaw

Pork Dinner

Serves: 2

Nutritional Information Per Serving (Coleslaw only)

Calories	Carbohydrate	Fibre	Protein	Total Fat	Saturated Fat
115 kcal	14 g	4 g	2 g	6 g	0.9 g

Ingredients

- 2 cups (150 g) green cabbage, chopped or shredded
- 1 cup (110 g) carrots, shredded
- ½ cup (80 g) onion, finely chopped
- 1 Tbsp (15 mL) olive oil
- 1 Tbsp (15 mL) vinegar
- 1 tsp (2 g) salt
- ½ tsp (1 g) black pepper

Directions

1. Add all ingredients in a bowl and toss well.
2. Serve cold with pork tenderloin and roasted potatoes and Jerusalem artichokes.

Volcanos close to Rabaul, New Britain, Papua New Guinea. Photo by Jens Walter, 2019.

NiMe DIET

Industrialized diets – high in processed foods and low in fibre – disrupt the gut microbiome and predispose us to chronic diseases, such as obesity, diabetes, and heart disease, that have reached epidemic proportions in industrialized countries.

Microbiome scientists **Anissa Armet** (PhD in Nutrition and Metabolism, and registered dietitian) and **Jens Walter** (Professor and Doctorate in Microbiology) have developed the Non-Industrialized Microbiome Restore diet, or NiMe diet (pronounced *Nee-Mee*), to restore key microbiome features affected by industrialization and promote cardiometabolic health. In this book, the authors present the scientific rationale for developing the NiMe diet, information on how the diet was clinically validated in a human trial, as well as the recipes used in the trial.

> *"Everybody knows that diet is important for health, but many underestimate the impact it can truly have. Every year, around 11 million deaths worldwide are caused by poor diet, yet studies suggest that life expectancy can be extended by 10 years by eating a healthy diet.*
>
> *This book offers a practical roadmap for restoring the gut microbiome and improving health through a diet that is inspired by traditional, non-industrialized dietary habits".*

Anissa M. Armet, PhD, RD
Jens Walter, Dr. rer. nat.