CHANGE YOUR DIET, CHANGE YOUR MIND

A POWERFUL PLAN TO IMPROVE MOOD, OVERCOME ANXIETY, AND PROTECT MEMORY FOR A LIFETIME OF OPTIMAL MENTAL HEALTH

GEORGIA EDE, MD



New York Boston

The advice herein is not intended to replace the services of trained health professionals, or be a substitute for medical advice. You are advised to consult with your health care professional with regard to matters relating to your health, and in particular regarding matters that may require diagnosis or medical attention.

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HIERARCHY OF EVIDENCE



An 1854 map of the Soho neighborhood of London with public water pumps indicated by encircled P's and cases of cholera infections indicated by black dashes. Notice that most cholera cases are clustered near the Broad Street water pump.

John Snow, On the Mode of Communication of Cholera (London: Churchill, 1855), map 1.

Please fill in your average use during the past year of each specified food.

(Please try to average your seasonal use of foods over the entire year. For example, if a food such as cantaloupe is eaten 4 times a week during the approximate 3 months that it is in season, then the *average* use would be one per week.)

	Never, or less than once per month	l-3 per mo.	2-4 per mo.	l per week	2-4 per week	5-6 per week	l per day	2-3 per day	4-5 per day	6+ per day
Raisins (1 oz or small pack) or										
Prunes (½ cup)										
Bananas (I)										
Cantaloupe (¼ melon)										
Watermelon (I slice)										
Fresh apples or pear (I)										

Apple juice or cider (small glass)					
Oranges (I)					
Orange juice (small glass)					
Grapefruit (½)					
Grapefruit juice (small glass)					
Other fruit juices (small glass)					
Strawberries, fresh, frozen, or canned ($\frac{1}{2}$ cup)					
Blueberries, fresh, frozen, or canned ($\frac{1}{2}$ cup)					
Peaches, apricots, or plums (I fresh or ½ cup canned)					

Frank E. Speizer et al., "Nurses' Health Study Questionnaire (1984 Long)," Nurses Health Study, https:// nurseshealthstudy.org/participants/questionnaires.

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EATING PRETZELS INCREASES **RISK OF ALCOHOLISM**



New study claims reducing pretzel consumption could decrease liver disease

Associated Press A study by the Acme Center for Nutritional Research was published last week indicating a strong correla- researcher Marianne Portenstein tion between pretzel consumption and alcoholism leading researchers to believe that they may have found a new risk factor for the disease that could have profound effects on alcohol-related health issues.

Researchers examined data from dietary questionnaires of 10,000 participants over 15 years and found that rates of alcoholism increased 38% for those who had more than three

"We were quite surprised when we noticed the pattern, but it really was undeniable," lead stated. "Even more interesting, it appears that the risk is even higher with malt beverages, a factor never specifically identi-fied before. If you eat pretzels and have alcoholism in your family, this is something you really want to be aware of

The California Wine Growers Association released a statement reassuring wine drinkers that they were at lower risk because most preferred cheese.

Suzanne Smith



Suzanne Smith, brgfx/123rf.com (brain section)



ANATOMY OF A NEURON

Suzanne Smith

Neurotransmitter	Role in the Brain	Medication Examples
Serotonin ¹³	Mood, sleep, sexual desire, anxiety, appetite, temperature regulation, learning, memory	Fluoxetine (Prozac) Sertraline (Zoloft) Escitalopram (Lexapro)
Dopamine ¹⁴	Attention, movement, motivation, learning, memory, reward processing	Bupropion (Wellbutrin) Bethylphenidate (Ritalin)
Norepinephrine ¹⁵	Attention, anxiety, arousal, learning, and memory	Atomoxetine (Strattera)
Acetylcholine ¹⁶	Attention, learning, cognition, memory	Donepezil (Aricept)
Glutamate ¹⁷	Learning, memory, excitation, cell death	Lamotrigine (Lamictal) Memantine (Namenda)
GABA ¹⁸ (gamma- aminobutyric acid)	Cognition, emotion, sleep	Lorazepam (Ativan) Clonazepam (Klonopin)
Melatonin	Sleep regulation	



SODIUM-POTASSIUM PUMPS IN A RESTING NEURON

The sodium-potassium pumps in a neuron's axon membrane maintain an electrical imbalance by pumping three sodium molecules outside the cell for every two potassium molecules it pumps into the cell.

designua/123rf.com, Suzanne Smith



FIRING NEURON

A sodium channel embedded in the membrane of the neuron's axon opens to allow sodium ions that had been forcibly removed from the cell to come rushing back in (top), stimulating an electrical current that travels to the axon terminal where it stimulates the release of neurotransmitters into the synapse (bottom).

Suzanne Smith, designua/123rf.com (sodium-potassium pump); guniita/123rf.com (neuron)



OLIGODENDROCYTE

Oligodendrocytes wrap neighboring axons with myelin. designua/123rf.com (oligodendrocyte), guniita/123rf.com (myelin)

Essential	Conditionally Essential	Nonessential
Histidine	Arginine	Alanine
Isoleucine	Cysteine	Asparagine
Leucine	Glutamine	Aspartate
Lysine	Glycine	Glutamate
Methionine	Proline	Serine
Phenylalanine	Selenocysteine	
Threonine	Tyrosine	
Tryptophan	Taurine ²⁶	
Valine		



Legend: neurotransmitter, amino acid, vitamin/mineral

Enzyme abbreviations: L-tryptophan hydroxylase (L-TPH), tetrahydrobiopterin (THB), aromatic L-amino acid decarboxylase (AAAD), Tyrosine hydroxylase (TH), dopamine beta-hydroxylase (DBH), choline acetyltransferase (ChAT), acetyl coenzyme A (Acetyl-CoA)



TRIGLYCERIDE STRUCTURE

Triglycerides are composed of three fatty acids attached to a glycerol backbone. This illustration includes the saturated fatty acid (SFA) myristic acid, the monounsaturated fatty acid (MUFA) oleic acid, the primary fat in olive oil, and the polyunsaturated fatty acid (PUFA) alpha-linolenic acid (ALA), an omega-3 fatty acid. *Suzanne Smith*

saturated fatty acid

Hurr ·.., 5.1 ŝ

cholesterol molecule



BRAIN ENERGY PRODUCTION SYSTEM

Two systems cooperate to produce the maximum amount of energy. Engine G partially breaks down glucose outside of the mitochondria and Engine M completely breaks down a variety of fuels inside of the mitochondria.

Suzanne Smith



SUGAR CONSUMPTION IN THE UK

Although it dipped briefly during World War I and World War II, the per capita consumption of sugar (as sucrose) in the UK increased thirteen-fold between 1700–1975. *Data source: Sidney Mintz,* Sweetness and Power: The Place of Sugar in Modern History (New York: Penguin, 1985), 67,143, 162, and 198.

SUGAR'S MANY ALIASES

The food processing industry uses more than sixty different names for sugar. Here is a list of the most common types of sugar and some examples of each to help you identify and avoid added sugars in your diet:

- **Sugars** of all kinds (beet sugar, fondant sugar)
- **Nectars** (agave nectar)
- Honey
- **Juices** (cane juice, fruit juice concentrates)
- **Malt** (barley malt, malt extract)
- **Dextrins** (maltodextrin, tapioca dextrin)
- **Solids** (corn solids)
- **Crystals** (date crystals)

- **Syrups** (sorghum syrup, brown rice syrup, maple syrup)
- Molasses
- Saccharides (galactodigasaccharides)
- Ingredients ending in **-ose** (galactose, sucrose)

Also, don't be seduced by flowery descriptions (such as "coconut blossom sugar") or healthy-sounding adjectives—"organic fair trade" sugar is still sugar.



LINOLEIC ACID CONTENT OF FAMILIAR FATS

Sunflower and safflower oil are now available in both high-linoleic and low-linoleic ("high oleic") formulas. The high-oleic variety has become more common, so that is the form listed in this table.

U.S. Department of Agriculture, Agricultural Research Service, FoodData Central, 2019, https://fdc.nal.usda.gov.



KYNURENINE PATHWAY—BALANCED

The kynurenine pathway under normal conditions.



KYNURENINE PATHWAY—UNBALANCED

The kynurenine pathway under stress throws neurotransmitters out of balance.



HORMONAL ROLLER COASTER

Glucose and insulin spikes trigger stress hormone reactions.

Data source: M. E. Daly et al., "Acute Effects on Insulin Sensitivity and Diurnal Metabolic Profiles of a High- Sucrose Compared with a High- Starch Diet." The American Journal of Clinical Nutrition 67, no. 6 (1998): 1186–96, https://doi.org/10.1093/ajcn/67.6.1186.



EFFECT OF SUGAR ON HEALTHY BOYS

Glucose-sweetened cola triggers dramatic surge in adrenaline levels.

T. W. Jones et al., "Enhanced Adrenomedullary Response and Increased Susceptibility to Neuroglycopenia: Mechanisms Underlying the Adverse Effects of Sugar Ingestion in Healthy Children," The Journal of Pediatrics 126, no. 2 (1995): 171–7, https://doi.org/10.1016 /s0022-3476(95)70541-4.



HIGH-GLYCEMIC-INDEX BREAKFAST INCREASES GLUCOSE, INSULIN, ADRENALINE, AND APPETITE

D. S. Ludwig et al., "High Glycemic Index Foods, Overeating, and Obesity," Pediatrics 103, no. 3 (1999): E26, https://doi.org/10.1542/peds.103.3.e26.

Fasting Glucose (mg/dl)	After-Meal (Postprandial) Glucose (mg/dl)
Ideal: 70 to 85	Best ≤110
Normal: 70 to 99	Better <125
Prediabetes range: ≥ 100	Good <140
Diabetes range: >125	Prediabetes range ≥ 140 Diabetes range ≥ 200



DR. FIGTREE'S CGM READINGS

Dr. Figtree's glucose response to traditional (rolled) oats and steel cut oats.

Health Condition	Effect of High Insulin
Non-alcoholic fatty liver disease (NAFLD)	Insulin tells the liver to turn excess glucose into fat. ¹¹ 98% of people with NAFLD have insulin resistance. ¹²
Tinnitus, vertigo, and hearing loss	High insulin levels disrupt electrical signaling in the ear. More than 90% of people with inner ear problems such as tinnitus, vertigo, and hearing loss have high insulin levels. ¹³
Coronary artery disease (CAD)	High insulin promotes high blood pressure and inflammation of the coronary arteries; also impairs their ability to relax. ¹⁴ At least ³ ⁄ ₄ of people with CAD have insulin resistance. ¹⁵
Obesity	High insulin tells fat cells to stop burning fat. ¹⁶ More than 90% of people with obesity have insulin resistance. ¹⁷
Gallbladder disease	High insulin tells the liver to overproduce cholesterol, thickening bile. ¹⁸
Breast cancer	High insulin tells breast cells to grow and multiply more than they should. ¹⁹
Colon cancer	High insulin tells colon cells to grow and multiply more than they should. ²⁰

Polycystic ovarian syndrome (PCOS) and infertility	High insulin levels raise testosterone levels in the ovaries. 70% of women with PCOS have insulin resistance. ²¹
Prostate enlargement	The higher the fasting insulin, the faster the prostate grows. ²²
Erectile dysfunction (ED)	Insulin resistance impairs ability of blood vessels in the penis to relax and dilate. More than 50% of men with ED have insulin resistance. ²³
Stroke	High insulin levels promote blood clot formation and make it harder for blood vessels to relax and dilate. ²⁴
High blood pressure	Insulin tells kidneys to retain sodium and water. ²⁵ 50% of people with high blood pressure have insulin resistance. ²⁶
Acne	High insulin levels raise levels of <i>androgens</i> , hormones that tell pores to overproduce an oily/waxy substance called sebum. About ³ / ₄ of people with acne have insulin resistance; the higher the insulin level, the more severe the acne. ²⁷

Do You Have Insulin Resistance?

There is no single direct test for insulin resistance, so doctors use a combination of three simple blood tests—fasting insulin, fasting lipids (cholesterol and triglycerides), and fasting glucose—to estimate where you stand on the insulin resistance spectrum. If you've had any of those tests in the past six months or so (and you haven't made any significant changes to your lifestyle since then), you can use the results from those tests. If not, ask your doctor to order these tests for you (or you can order tests yourself; see chapter 17). You don't need every test on the list—just choose a few that you've already had or that are easiest for you to obtain. Note: "fasting" means nothing to eat or drink except water for twelve to fourteen hours prior to the test.

Test	Result
Fasting insulin	Higher than 10 µU/ml makes insulin resistance very likely Stay in the single digits; below 6 µU/ml is ideal

Fasting blood glucose	Above 100 mg/dl = insulin resistance Below 100 mg/dl is good; between 70 and 85 mg/dL is ideal
Fasting triglycerides	Below 100 mg/dl is ideal Over 150 mg/dl makes insulin resistance very likely (Note: African Americans can have very low fasting triglycerides but still have insulin resistance)
HDL cholesterol	Men: higher than 40 mg/dl is good Women: higher than 50 mg/dl is good
Triglyceride-to-HDL ratio (Divide your triglycerides by your HDL)	Below 2.0 is good; the closer to 1.0 the better (Your triglycerides should be no more than twice your HDL)
Waist-to-height ratio (Divide your waist circumference by your height)	Below 0.5 is good (Your waist circumference should be less than half your height)
HOMA-IR (Homeostatic Model Assessment of Insulin Resistance)	[fasting insulin (µU/ml) x fasting glucose (mg/dl)] ÷ 405 Less than 1.0 is excellent 1.8 or higher indicates insulin resistance
Kraft insulin assay This is the most accurate insulin resistance test available to consumers but also the most complicated. It measures your glucose <i>and your insulin</i> levels at several timepoints before and after drinking a 75 gram dose of glucose to see how your metabolism handles the glucose load. Learn more in this informative video by Ivor Cummins featuring Dr. Joseph R. Kraft, the pathologist who developed this test: https://youtu.be/w0nVddXoc.	



Patient	Binge episodes per week at start	Binge episodes per week after 6 months	Weight loss
54-year-old woman	14+	0	37 lbs
34-year-old man	8-11	0	44 lbs
62-year-old woman	8-10	0	22 lbs

Assessment Scale	Day Zero	12 Days Later
mY-FAS-2.0 (food addiction)	11711	1/11
GAD-7 (anxiety)	19/21	0/21
PHQ-9 (depression)	23/27	0/27
BDI (depression)	37/63 (severe)	7/63 (normal)

Vitamin A	12 to 24 times more bioavailable in animal foods ¹⁵
Vitamins BI, B2, B3, B6, B7	Easier to find in animal foods
Vitamin B9 (Folate)	Insoluble fiber matrix in some plant foods hinders bioavailability

Micronutrient Availability in Plant and Animal Foods
Vitamin BI2	Not found in plant foods
Vitamin C	Easier to find in plant foods
Vitamin D	D3 from animal foods easier to use/store than D2 from fungi and yeast
Vitamin E	Easier to find in plant foods
Vitamin KI	Easier to find in plant foods
Vitamin K2	Not found in plant foods (except in a few fermented foods, e.g., natto)
Iron	Bioavailability of heme iron (15–35%) is greater than non-heme iron (2–20%) ¹⁶ Eggs, dairy, and many plants contain compounds that interfere with iron absorption
Calcium	Some plants contain compounds that interfere with calcium absorption
lodine	Many plants contain goitrogens that interfere with iodine utilization
Zinc	Many plants contain compounds that interfere with zinc absorption
EPA and DHA	Not found in plant foods. Plant foods contain ALA, which must be converted to EPA and DHA Conversion of ALA to EPA is low: 8% in men and up to 21% in women ¹⁷ Conversion of ALA to DHA is very low: 0-4% in men and 9% in women ¹⁸



CHOLESTEROL AND FAT TRANSPORTATION SYSTEM

The liver sends very-low-density lipoproteins (VLDLs) carrying triglycerides and cholesterol into the bloodstream. As VLDL delivers triglycerides to cells, it gradually shrinks to become low-density liproprotein (LDL), which distributes cholesterol to needy cells and then returns to the liver. High-density lipoprotein (HDL) collects damaged or unneeded cholesterol from cells and carries it to the liver to be recycled or removed from the body.

Suzanne Smith

Region/Ethnicity*	Prevalence of Lactose Malabsorption ⁴²
Scandinavia	3–5%
Great Britain	5–15%
Germany	15%
Austria	15–20%
North American whites	15%
Finland	17%
France	17% (northern); 65% (southern)
Italy	20–70%
India	30% (northern); 70% (southern)
North American Hispanics	53%
The Balkans	55%
South America	65–75%
North American blacks	80%
Africa	70–90% (exceptions: Bedouins, 25%; Tuareg, 13%; Fulani, 22%)
Central Asia	80%
Eastern Asia	90–100%

*Terms in this column were those used in the original study; regions/ethnicities not included here were not represented in the study.

Protein Source	DIAAS	Quality
Whole milk	114	High quality
Egg (hard boiled)	113	
Beef	112	
Chicken	108	
Tilapia	100	
Tofu	97	Good quality
Chickpea	83	
Pea protein concentrate	82	
Cooked rice	59	Poor quality
Cooked peas	58	
Almonds	40	
Seitan (wheat)	28	



ALL OMEGA-3S ARE NOT CREATED EQUAL

The only type of omega-3 found in plant foods is ALA, which our bodies struggle to convert into EPA and DHA (the omega-3s we actually need), whereas animal foods naturally contain EPA and DHA.



EFFECT OF PHYTATE ON ZINC ABSORPTION

Phytate, an antinutrient found in beans, corn, and other seed foods, strongly interferes with zinc absorption from oysters.

N. W. Solomons, R. A. Jacob, O. Pineda, and F. Viteri, "Studies on the Bioavailability of Zinc in Man. II. Absorption of Zinc from Organic and Inorganic Sources," The Journal of Laboratory and Clinical Medicine 94, no. 2 (1979): 335–43.

Toxin	Health Risk	Food Examples
Oxalates	Interfere with mineral absorption and can crystallize, contributing to kidney stones in susceptible individuals	Starfruit, spinach, rhubarb, beets, raspberries
Tannins	Bind to and irritate the gut lining, reduce thiamine and iron absorption, and interfere with digestion	Tea leaves, grapeskins, cranberries, pomegranates
Coumarins	Block a liver enzyme responsible for processing a wide variety of medications; increase susceptibility to sunburn	Cinnamon, citrus peel, green tea
Salicylates	Neurotoxic (at very high doses)	Apples, grapes, avocados, citrus, many others (most fruits contain salicylates)
Thiosulfinates	Interfere with clotting system	Garlic, onion, leeks, scallions

Saponins	Disrupt membranes and interfere with digestion	Licorice root, alfalfa sprouts, ginseng
Cucurbitacins	Make tiny blood vessels leaky, which can cause vomiting and gastrointestinal bleeding	Squash, zucchini, watermelon



Google Search Trends for "Vegan" and "Vegetarian"

RELATIVE NUMBER OF GOOGLE SEARCHES FOR "VEGAN" AND "VEGETARIAN" IN THE UNITED STATES BETWEEN JANUARY 2004 AND FEBRUARY 2023.

Google Trends indicates the relative popularity of the search terms as a ratio where 100 represents the peak popularity. Data source: Google Trends (https://www.google.com/trends)



BARNARD STUDY RESULTS

Low-glycemic vegan diet modestly reduces hemoglobin AIC.

Neal D. Barnard et al., "A Low-Fat Vegan Diet and a Conventional Diabetes Diet in the Treatment of Type 2 Diabetes: A Randomized, Controlled, 74-wk Clinical Trial," The American Journal of Clinical Nutrition 89, no. 5 (2009): 1588S-96S, https://doi.org/10.3945/ajcn .2009.26736H.

Nutrient Deficiency	Mental Health Risks	
Vitamin BI2	Behavior change, psychosis, cognitive impairment ¹⁸	
Iron	ADHD, ¹⁹ anxiety, depression, psychosis, sleep disorders ²⁰	
Zinc	ADHD, ²¹ depression, ²² psychosis ²³	
lodine	Hypothyroidism, anxiety ²⁴	
DHA/EPA	ADHD, autism, mood disorders, schizophrenia, dementia ²⁵	

Plant	Nutrient	Shortcomings	

Plant Nutrient Limitation	Essential Nutrient
Not found in plants	Vitamin BI2
Require conversion	DHA and EPA Vitamin K2 Vitamin A
Poor bioavailability	Iron Zinc Calcium
Limited plant food sources	lodine Choline Selenium Lysine, methionine and glycine (amino acids)
Conditionally essential ²⁹ (required only if lysine and methionine are insufficient in the diet)	Carnitine (made from lysine and methionine) Taurine (made from methionine and cysteine) ³⁰



CORE PRINCIPLES OF A BRAIN-HEALTHY DIET

The core of your diet should be non-dairy animal foods supplemented with fruits and vegetables as tolerated. Dairy, nuts, seeds, and legumes offer nutritional value but are risky. Grains, sugar, vegetable oils, and ultraprocessed foods are best avoided entirely. *Suzanne Smith*



QUIET DIET ROAD MAP

Your Body of Evidence: Food Intolerance Symptom Checklist

If you have repeatedly experienced any of the following symptoms, place a checkmark in the box next to those symptoms and notice whether any of them improve when you follow Quiet Diet principles.

- □ Bloating
- □ Fatigue
- □ Headaches
- \Box Aches and pains
- □ Brain fog
- Dark circles under your eyes
- □ Acne
- □ Itching
- Extremely dry skin
- Burning sensations in feet or hands
- □ Stomach pain
- □ Heartburn

- \Box Sinus congestion
- □ Sneezing
- □ Flushed skin
- □ Racing or pounding heart
- □ Fluid retention
- \Box Wheezing/coughing
- □ Constipation/diarrhea
- □ Gas/flatulence
- □ Nausea
- □ Plantar fasciitis (painful soles)
- □ Reflux
- □ Eczema





Meal Plans and Recipes

Patricia Daly (https://patriciadaly.com) is an internationally recognized nutrition therapist who specializes in the practical implementation of metabolic health protocols and who credits the ketogenic diet for helping to quiet an aggressive case of eye cancer she was diagnosed with fifteen years ago. She is the co-author of *The Ketogenic Kitchen*, a cookbook and guide specifically for people with cancer. Born in Switzerland and living in Ireland, her creative recipes have a distinctive European flair.

Patricia transformed the Quiet Diet brain food rules into delicious recipes and seven-day meal plans to give you a taste of what it's like to eat in a quieter way. You can follow the meal plans as they're written, mix and match recipes you are most interested in, or use the Quiet Diet food lists to create your own recipes. Since many typical breakfast foods such as cereal, toast, and yogurt are excluded from all Quiet Diet food lists (and even eggs are excluded from Quiet Carnivore), some of the breakfast recipes in this book may seem unusual. However, if you are following Quiet Paleo or Quiet Keto, you can simply eat an omelette every morning if you prefer. Patricia chose the types of fat that best complimented each meal, but you're welcome to substitute any healthy fat of your choice so long as it is on the food list for the plan you are following.

Meal plans are based on a 2,000 calorie per day diet and provide approximately 75 grams of protein per day. Since your protein needs may be different, each recipe includes a field labeled "customize your protein" that helps you easily dial the protein content up or down, depending on your individual needs. (To estimate your daily protein requirements, see chapter 17.) If you're following the meal plans, pay attention to the "plan ahead" notes that prompt you to prepare certain ingredients for the next day's recipes.

The Quiet Keto plans in this book contain about 75 grams of protein and 20 grams of net carbohydrate (total carbohydrate minus fiber) per day, making this a *modified ketogenic diet* of approximately 15 percent protein, 5 percent carbohydrate, and 80 percent fat.

Bon appétit!

QUIET PALEO MEAL PLAN

	Day I	Page #
Breakfast	Veggie Omelette	335
Lunch	Shrimp Stir-Fry with Mayo	346
Dinner	Lemony Chicken with Green Olives and Mixed Leafy Salad	360
Plan ahead	Cook sweet potato for day 2 lunch	
	Day 2	
Breakfast	Simple Meatballs with Mango Salsa	336
Lunch	Dilly Tuna Salad	349
Dinner	Pressure-Cooked Lamb Shoulder	363
Plan ahead	Cook potatoes for day 3 lunch	
	Day 3	
Breakfast	Duck Breast in Savory Broth	337
Lunch	Egg Salad	351
Dinner	Roast Chicken	365
Plan ahead	Cook celery root and save chicken thighs for day 4 lunch	
	Day 4	
Breakfast	Pan-Seared Pork Chops	339
Lunch	Chicken Wraps with Celery Root and Apple Salad	352
Dinner	Spaghetti Bolognese	367
Day 5		
Breakfast	Frittata Primavera	340
Lunch	Herb Pizza with Chermoula	354
Dinner	Ultramoist Salmon Parcels	369
Plan ahead	Make extra salmon for day 6 lunch	

Day 6		
Breakfast	Chick-adoo Breakfast	342
Lunch	Creamy Salmon Vegetable Soup	356
Dinner	Roasted Pork Belly with Stir-Fry	371
Plan ahead	Cook the sweet potato for day 7 lunch	
Day 7		
Breakfast	Tweaked Kedgeree	344
Lunch	Salmon-Stuffed Portobellos	358
Dinner	Liver Cakes with Pomegranate, Mint, and Fennel Salad	373

QUIET KETO MEAL PLAN

Day I		Page #
Breakfast	Veggie Omelette	335
Lunch	Shrimp Stir-Fry with Mayo	346
Dinner	Lemony Chicken with Green Olives and Mixed Leafy Salad	360
Plan ahead	Cook zucchini for day 2 lunch	
	Day 2	
Breakfast	Simple Meatballs	336
Lunch	Dilly Tuna Salad	349
Dinner	Pressure-Cooked Lamb Shoulder	363
	Day 3	
Breakfast	Duck Breast in Savory Broth	337
Lunch	Egg Salad	351
Dinner	Roast Chicken	365
Plan ahead	Save chicken thighs for day 4 lunch	
Day 4		
Breakfast	Pan-Seared Pork Chops	339
Lunch	Chicken Wraps with Artichoke Tapenade	352
Dinner	Spaghetti Bolognese	367

Day 5		
Breakfast	Frittata Primavera	340
Lunch	Herb Pizza with Chermoula	354
Dinner	Ultramoist Salmon Parcels	369
Plan ahead	Make extra salmon parcels for day 6 lunch	
Day 6		
Breakfast	Chick-adoo Breakfast	342
Lunch	Creamy Salmon Vegetable Soup	356
Dinner	Roasted Pork Belly with Stir-Fry	371
Day 7		
Breakfast	Tweaked Kedgeree	344
Lunch	Salmon-Stuffed Portobellos	358
Dinner	Liver Cakes with Mint and Fennel Salad	373

QUIET CARNIVORE MEAL PLAN

	Day I	Page #		
Breakfast	Beefy Lamb Burgers	368		
Lunch	Shrimp in Smashing Broth	348		
Dinner	Chicken Thighs	362		
Day 2				
Breakfast	Simplest Meatballs	337		
Lunch	Tuna with Creamy Marrow Sauce	350		
Dinner	Pressure-Cooked Lamb Shoulder	363		
Plan Ahead	Save leftover lamb for day 3 lunch			
Day 3				
Breakfast	Crispy Duck Breast	338		
Lunch	(lamb leftovers)			
Dinner	Roast Chicken	365		
Plan ahead	Save chicken thighs for day 4 lunch			

Day 4				
Breakfast	Pan-Seared Pork Chops	339		
Lunch	Shredded Chicken	353		
Dinner	Beefy Lamb Burgers	368		
Day 5				
Breakfast	Chicken Liver with Bacon	341		
Lunch	Lickety Split Lamb Stir-Fry	355		
Dinner	Ultramoist Salmon Parcels	369		
Plan ahead	Marinate the chicken wings for day 6 breakfast and dry the pork belly for day 6 dinner			
Day 6				
Breakfast	Pan-Fried Chicken Wings	343		
Lunch	Ribeye!	357		
Dinner	Crackling-Top Pork Belly	372		
Plan ahead	Save rendered pork fat for day 7 breakfast			
Day 7				
Breakfast	Scallops in Broth	345		
Lunch	Salmon Muffins	359		
Dinner	Lamb and Liver Stir-Fry	374		

BREAKFASTS

Veggie Omelette

Makes I serving

2 tbsp duck fat
1 small leek (3 oz), thinly sliced
¹/₂ cup celery root, grated
2 portobello mushrooms, sliced

3 eggs I tsp dried thyme Salt and pepper, to taste ½ avocado, sliced

DIRECTIONS:

- 1. Heat the duck fat in a frying pan over medium heat.
- 2. Fry the leek, celery root, and mushrooms for 5–10 minutes or until softened.
- 3. Whisk together eggs and thyme, add salt and pepper to taste.
- 4. Pour the egg mixture over the vegetables, cover, and gently cook for 5–7 minutes or until the egg is set.
- 5. Garnish with sliced avocado and serve.

Nutrition facts per one serving: 54g fat, 27g protein, 28g total carbs, 8g fiber, 680 calories, 72% fat, 16% protein, 12% carbs

Keto variation:

Omit the celery root.

Nutrition facts per one serving: 54g fat, 26g protein, 13g total carbs, 7g fiber, 610 calories, 80% fat, 17% protein, 3% carbs

Customize your protein: 1 egg = 6 grams protein

Simple Meatballs with Mango Salsa

Makes	I	serving
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2 tbsp tallow	5 oz grass-fed ground beef
l spear broccoli (2 oz), finely	l tsp ground oregano
chopped	½ tsp salt
I small onion (2 oz), finely chopped	ground black pepper, to taste

DIRECTIONS:

- 1. Melt tallow in a frying pan, cook the broccoli and onion over medium heat until soft, about 3 minutes.
- 2. Transfer vegetables to a mixing bowl (leaving some tallow in the pan), add remaining ingredients to the bowl, and mix together well with your hands.
- Shape 4-6 meatballs (the smaller, the quicker they'll cook) and fry them over medium heat. Cover, but turn them occasionally, for about 6 minutes until cooked through.
- 4. Serve with mango salsa (recipe below).

Mango Salsa

 $\frac{1}{2}$ cup mango, cubed (3 oz)

I heaping tbsp cilantro leaves, finely chopped

I tbsp lime juice

DIRECTIONS:

Mix the mango with chopped cilantro and lime juice.

Nutrition facts per one serving: 56g fat, 29g protein, 24g total carbs, 5g fiber, 700 calories, 71% fat, 17% protein, 12% carbs

Keto variation: Simple Meatballs

Serve without the mango salsa. Use mayonnaise (see recipe page 346) or mustard as dressing, if desired.

Nutrition facts per one serving: 55g fat, 27g protein, 9g total carbs, 3g fiber, 640 calories, 78% fat, 17% protein, 5% carbs

Carnivore variation: Simplest Meatballs

2 tbsp tallow9 oz ground beefSalt and pepper, to taste

DIRECTIONS:

- 1. Shape 8 meatballs and fry them in the tallow over medium heat.
- 2. Cover, but turn them occasionally, for about 6 minutes until cooked through.

Nutrition facts per one serving: 53g fat, 52g protein, 0g total carbs, 0g fiber, 690 calories, 70% fat, 30% protein, 0% carbs

Customize your protein: 1 oz ground beef = 5 grams protein

Duck Breast in Savory Broth

Makes 2 servings

I florets cauliflower (I oz), chopped
cup bone broth
cup spinach leaves
avocado, sliced
alt and pepper, to taste

DIRECTIONS:

- 1. Melt the duck fat in a frying pan. Cook the duck breast skin side down over medium heat to render the fat.
- 2. When the skin is crisp and brown, remove the duck from the pan and put it on a side plate.
- 3. Briefly blitz the sweet potato, cauliflower, and garlic with the bone broth in a food processor until smooth.*
- 4. Add the sauce to deglaze the frying pan of all the juices (stand back for this if the pan is hot). Turn the heat down, add the spinach, and let it wilt.
- 5. Add the duck breast back to cook it until done to your preference (an internal temperature of 130°F for medium rare, 145°F for medium).
- 6. Cut the duck breast in half, pour the vegetable broth over it, and serve with avocado slices.

* If you prefer a thicker sauce than broth, start with $\frac{1}{2}$ cup of bone broth and add more until you reach your desired thickness. Reducing bone broth will slightly reduce the total protein.

Nutrition facts per one serving: 53g fat, 25g protein, 25g total carbs, 8g fiber, 630 calories, 75% fat, 16% protein, 9% carbs

Keto variation:

Omit the sweet potato.

Nutrition facts per one serving: 53g fat, 24g protein, 14g total carbs, 6g fiber, 590 calories, 81% fat, 16% protein, 3% carbs

Carnivore variation: Crispy Duck Breast

Makes I serving

I large duck breast (8 oz) Salt, to taste I tbsp duck fat

DIRECTIONS:

- 1. Pat the breast dry with a paper towel, score the skin (not the meat) in a crosshatch pattern (this will make the skin crispier), and season with salt.
- 2. Melt the duck fat in a frying pan.
- 3. Lay the breast skin side down and cook over medium heat until the skin is crisp and brown (75% of cooking time should be on the skin side).
- 4. Flip the breast and cook the meat to your preference (an internal temperature of 130°F for medium rare, 145°F for medium).
- 5. Remove the duck from the pan and serve.

Nutrition facts per one serving: 43g fat, 34g protein, 0g total carbs, 0g fiber, 520 calories, 74% fat, 26% protein, 0% carbs

Customize your protein: 1 oz duck breast = 5 grams protein

Pan-Seared Pork Chops

Makes 2 servings

- 2 pork chops (go for the slightly thinner version, about 5 oz each)
- 6 tbsp lard
- Salt and pepper, to taste
- 2 large spring onions or scallions (includes tops and bulb), chopped
- 2 cups shiitake mushrooms (6 oz), sliced
- 6 sprigs fresh thyme
- I tbsp fresh rosemary
- $^{1\!/_{2}}$ cup bone broth
- 4 raw figs, washed and quartered

DIRECTIONS:

- Time permitting, allow the pork chops to come to room temperature for 20– 30 minutes before cooking. Pat dry with a paper towel.
- Heat 3 tablespoons of the lard in a frying pan and sear the pork chops for 3–4 minutes per side until well browned. Season lightly with salt and pepper, transfer the chops to a plate, and cover with foil to keep warm.
- 3. Add the spring onions, mushrooms, and herbs to the frying pan with the pan juices and stir fry for about 5 minutes.
- 4. Pour in the bone broth to deglaze the pan, add the figs, and bring to a boil. Turn down the heat and stir in the rest of the lard. Simmer for a few more minutes.
- 5. Place the pork chops back in the pan. Cover and simmer another 2 minutes. Serve with more herbs if desired.

Nutrition facts per one serving: 62g fat, 45g protein, 24g total carbs, 5g fiber, 830 calories, 67% fat, 22% protein, 11% carbs

Keto variation:

Reduce the shiitake mushrooms to 1 cup and omit the figs.

Nutrition facts per one serving: 63g fat, 43g protein, 5g total carbs, 2g fiber, 760 calories, 74% fat, 23% protein, 3% carbs

Carnivore variation:

Makes I serving

I pork chop (6 oz) I tbsp lard Salt, to taste 1/4 cup bone broth

DIRECTIONS:

- Time permitting, allow the pork chop to come to room temperature for 20– 30 minutes before cooking. Pat dry with a paper towel.
- 2. Heat the lard in a frying pan and sear the pork chop for about 4 minutes per side until well browned. Remove the chop from the pan, slice it into bite-size pieces, and season lightly with salt before placing it aside in a soup dish.
- 3. Pour in the bone broth to deglaze the pan and bring to a boil. Pour over the pork chop and serve.

Nutrition facts per one serving: 53g fat, 49g protein, 0g total carbs, 0g fiber, 690 calories, 70% fat, 30% protein, 0% carbs

Customize your protein: 1 oz pork chop = 8 grams protein

Frittata Primavera

Makes I serving

I large spring onion (include tops and bulb), finely chopped	4 eggs 4 Kalamata olives, halved
 ¹/₂ cup butternut squash, grated or cubed into small pieces 5 asparagus spears, raw, chopped 2 tbsp olive oil 	I clove garlic, minced I tbsp dried rosemary Salt and pepper, to taste

DIRECTIONS:

- 1. Cook onion, squash, and asparagus in olive oil over medium heat. Cover pan, turn down the heat a bit, and stir occasionally while vegetables soften.
- 2. Beat the eggs in a bowl and fold in the olives, garlic, rosemary, salt, and pepper.
- 3. After about 5 minutes, or when the vegetables have softened a bit, add the egg mixture and cook everything on low to medium heat for about 10 minutes until the eggs are set. The frittata may be finished in the oven if you prefer a golden brown crust.

Nutrition facts per one serving: 54g fat, 30g protein, 24g total carbs, 6g fiber, 680 calories, 71% fat, 18% protein, 11% carbs

Keto variation:

Omit the butternut squash.

Nutrition facts per one serving: 54g fat, 29g protein, 11g total carbs, 4g fiber, 630 calories, 77% fat, 18% protein, 5% carbs

Customize your protein: 1 egg = 6 grams protein

Chicken Liver with Bacon (carnivore)

Makes I serving

2 tbsp lard

2 oz bone broth

5 oz chicken liver

3 oz uncured bacon (about 6 strips), cut into 1-inch strips Salt

DIRECTIONS:

- 1. Melt the lard in a frying pan, add the bone broth, and bring to a boil.
- 2. Add the liver and bacon and cook on high temperature, but only for 2 minutes or less—until the meat has changed color.
- 3. Reduce the heat and simmer for a few more minutes—do not overcook to ensure the liver stays tender. Season well with salt and serve.

Nutrition facts per one serving: 62g fat, 55g protein, 0g total carbs, 0g fiber, 780 calories, 72% fat, 28% protein, 0% carbs

Customize your protein: 1 oz chicken liver = 5 grams protein Customize your protein: 1 bacon strip = 5 grams protein

Chick-adoo Breakfast

Makes I serving

3 tbsp lard	2
1⁄2 cup bone broth	
l small chicken breast (3 oz)	1
I cup Chinese cabbage (3 oz), thinly	S
shredded	5

2 medium carrots, sliced into long strips with a julienne peeler /2 avocado, sliced Salt and pepper, to taste 5 sprigs fresh cilantro, chopped

DIRECTIONS:

- 1. Bring the lard and bone broth to a boil in a frying pan.
- 2. Add chicken breast and cook in the boiling broth until the meat turns white.
- 3. Add the cabbage and carrots and simmer, covered, for 10-15 minutes or until the chicken is cooked through.
- 4. Top with sliced avocado, cover, and leave for 2-3 minutes.
- 5. Season with salt and pepper.
- 6. Garnish with chopped cilantro and serve.

Nutrition facts per one serving: 53g fat, 34g protein, 26g total carbs, 10g fiber, 680 calories, 70% fat, 20% protein, 10% carbs

Keto variation:

Omit the Chinese cabbage and carrots.

Nutrition facts per one serving: 53g fat, 28g protein, 12g total carbs, 5g fiber, 600 calories, 79% fat, 18% protein, 3% carbs

Customize your protein: 1 oz chicken breast = 8 grams protein

Pan-Fried Chicken Wings (carnivore)

Plan ahead: For best results, rub the lard and salt into the wings, cover with a plate, and leave in the fridge overnight to marinate—the meat will become more tender.

Makes I serving

2 tbsp lard 4 chicken wings (2 oz each) ½ cup bone broth Salt, to taste

DIRECTIONS:

- 1. Heat the lard in a frying pan.
- 2. When the lard is hot, add the marinated chicken wings and sear them over high heat for about 2 minutes on both sides.
- 3. Reduce heat to low and continue cooking for 15 minutes or until the meat is tender. If you cover it, make sure to leave the lid cracked. Flip the wings about three times during cooking.
- 4. Take the frying pan off the stove top, remove the chicken, and add the bone broth to the pan. Deglaze to make sure to get all of the juices.
- 5. Serve the chicken wings and bone broth separately (the broth will make the wings soggy).

Nutrition facts per one serving: 64g fat, 58g protein, 0g total carbs, 0g fiber, 820 calories, 70% fat, 30% protein, 0% carbs

Customize your protein: 1 chicken wing (2 oz) = 14 grams protein

Tweaked Kedgeree

This is a heavily tweaked version of kedgeree, which is an ancient Indian dish that typically combines smoked fish, egg, onion, butter, and rice.

Makes 2 servings

- I fillet of trout (6 oz)
- 6 tbsp duck fat
- 4 cups cauliflower, finely chopped
- I medium red onion (7 oz), finely chopped
- 2 cups mushrooms (6 oz), quartered
- I cup raw spinach

- 4 sprigs fresh cilantro, finely chopped
- 10 leaves fresh basil or lemon balm, finely choppedSalt and pepper, to taste
- 4 hard-boiled eggs, quartered

DIRECTIONS:

- 1. Fry the trout in duck fat over medium heat for 3–4 minutes. Remove from the pan and cut it into 6 pieces. Keep the fish warm.
- 2. Finely chop the cauliflower or use your blender to make cauliflower rice. Add the onions, mushrooms, spinach, and cauliflower to the frying pan.
- 3. Toss in the herbs, season with salt and pepper, and cook about 5–10 minutes, stirring occasionally.
- 4. Add the trout pieces back in and stir-fry for another 5 minutes. Serve with the quartered eggs on top or mixed in—whichever you prefer.

Nutrition facts per one serving: 53g fat, 37g protein, 20g total carbs, 6g fiber, 680 calories, 69% fat, 22% protein, 9% carbs

Keto variation:

Swap the cauliflower for 3 cups broccoli (9 oz).

Omit the onion.

Nutrition facts per one serving: 53g fat, 37g protein, 13g total carbs, 5g fiber, 660 calories, 72% fat, 22% protein, 6% carbs

Customize your protein: 1 oz trout fillet = 6 grams protein

Scallops in Broth (carnivore)

Most shellfish is very low in fat so be sure to add some rendered fat from another dish or a good amount of duck or other fat.

Makes I serving

½ cup bone broth
5 tbsp rendered pork fat (saved from dinner on day 6) or other fat
10 oz scallops
Salt, to taste

DIRECTIONS:

- 1. Heat the bone broth and the rendered pork fat.
- 2. Add the scallops, bring to a quick boil, and poach over medium heat for about 4 minutes. If you prefer, you can also pan-fry the scallops in the pork fat to give them a golden crust.
- 3. Season well with salt and serve.

Nutrition facts per one serving: 63g fat, 52g protein, 0g total carbs, 0g fiber, 775 calories, 73% fat, 27% protein, 0% carbs

Customize your protein: 1 oz scallops = 5 grams protein

LUNCH

Shrimp Stir-Fry with Mayo

Makes 2 servings

- 2 tbsp olive oil
- 7 oz shrimp, peeled
- 2 cups broccoli (6 oz), chopped
- 3 medium carrots (6 oz), sliced into julienne strips
- I medium zucchini (7 oz), sliced into thin strips or grated
- I tsp salt

I/4 tsp ground black pepper

- 3 tbsp homemade mayo (recipe below)
- I avocado, mashed
- 4 large lettuce leaves
- 2 tbsp lemon juice

DIRECTIONS:

- Heat olive oil in a frying pan over medium heat. Add shrimp and stir-fry for 3–4 minutes until they turn pink.
- 2. Add the broccoli, carrots, zucchini, salt, and pepper. Cover and simmer for 10 minutes until the vegetables are just softened.
- 3. Make the mayonnaise (see recipe below) and mix it with the mashed avocado.
- 4. Serve the stir-fry in lettuce leaves, topped with the mayo/avocado mash and lemon juice.

Homemade Mayonnaise

Makes about I cup

- I/2 clove garlic, finely chopped
- I cup mild olive oil (organic)

I very fresh egg Salt and pepper, to taste

2 tsp apple cider vinegar

DIRECTIONS:

- 1. Sauté garlic in 1 tablespoon olive oil until soft. Let cool.
- 2. Place everything in a narrow glass jar (e.g. narrow-mouth mason jar) and let the oil rise to the top. Use egg straight out of the fridge.
- 3. Place stick/immersion blender at the bottom of the jar and turn on. Stay at the bottom of the jar for about 20 seconds until the mayo starts to emulsify. Then, slowly raise the blender out of the jar and pulse a few times until the whole mixture is thick and creamy.
- 4. Can be stored in the fridge for up to 3 days.

Nutrition facts per one serving: 57g fat, 27g protein, 31g total carbs, 12g fiber, 700 calories, 74% fat, 16% protein, 10% carbs

Keto variation:

Use only 1 cup of broccoli. Omit the carrots. Use 4 tbsp of mayonnaise. Use only ½ avocado.

Nutrition facts per one serving: 59g fat, 25g protein, 13g total carbs, 5g fiber, 650 calories, 81% fat, 15% protein, 4% carbs

Customize your protein: 1 oz shrimp = 6 grams protein

Shrimp in Smashing Broth (carnivore)

Makes I serving

- I/2 cup bone broth
- 3 tbsp duck fat
- 5 oz shrimp, peeled
- 3 oz salmon, cut into 3 pieces

DIRECTIONS:

- 1. Heat the broth in a shallow pan.
- 2. When hot, add the duck fat, shrimp, and salmon, and bring to a quick boil.
- 3. Simmer over medium heat until the shrimp and salmon are fully cooked. Add salt to taste and serve.

Nutrition facts per one serving: 50g fat, 50g protein, 0g total carbs, 0g fiber, 640 calories, 70% fat, 30% protein, 0% carbs

Customize your protein: 1 oz shrimp = 6 grams protein; 1 oz salmon = 6 grams protein

Dilly Tuna Salad

Plan ahead: Pre-cook the sweet potato (for the paleo recipe) or zucchini (for the keto variation) the night before and chill in the fridge.

Makes 2 servings

- I medium sweet potato, (about 7 oz), cut into ½ inch cubes
- 6 tbsp olive oil, divided
- I medium head lettuce, shredded
- 7 oz tuna in water, drained
- 2 tbsp capers

- 6 artichoke hearts, canned (drained and chopped)
- 2 tbsp apple cider vinegar
- 2 heaping tbsp homemade mayo (from page 346)
- 10 sprigs dill, chopped
- Salt and pepper, to taste

DIRECTIONS:

- 1. Toss the sweet potato with 1 tablespoon of olive oil and bake on parchment paper for about 15 minutes at 425°F, until tender. Let cool and chill in the fridge.
- 2. Mix lettuce, chilled sweet potato, and tuna in a bowl.
- 3. Sprinkle capers and chopped artichokes on top.
- 4. In a separate bowl, mix vinegar, mayonnaise, and 5 tablespoons olive oil; season with dill, salt, and pepper and pour over the salad.
- 5. Gently toss together and serve.

Nutrition facts per one serving: 59g fat, 28g protein, 25g total carbs, 5g fiber, 730 calories, 72% fat, 16% protein, 12% carbs

Keto variation:

Swap sweet potatoes for 1 medium zucchini (9 oz), sliced or cubed. Toss with 1 tablespoon olive oil and bake on parchment paper for about 5 minutes at 350°F until lightly softenened, then chill.

Use 10 artichoke hearts.

Nutrition facts per one serving: 59g fat, 29g protein, 9g total carbs, 3g fiber, 670 calories, 79% fat, 17% protein, 4% carbs

Customize your protein: 1 oz canned tuna, drained = 7 grams protein
Tuna with Creamy Marrow Sauce (carnivore)

Makes I serving

1/4 cup bone broth2 oz bone marrow (e.g. beef)Salt, to taste7 oz tuna in water, drained

DIRECTIONS:

- 1. If you have bones with marrow, roast them at high heat for 10–15 minutes and then scoop the marrow out.
- 2. Heat the bone broth, add the marrow, and bring to a boil. Season well with salt.
- 3. In a blender, process the broth and marrow to get a creamy "sauce." You can use more or less broth if you prefer a thinner or thicker sauce.
- 4. Add the tuna, heat for another 5 minutes or so and enjoy.

Nutrition facts per one serving: 54g fat, 59g protein, 0g total carbs, 0g fiber, 740 calories, 69% fat, 31% protein, 0% carbs

Customize your protein: 1 oz canned tuna = 7 grams protein

Egg Salad

Plan ahead: Cook the potatoes the night before and chill in the fridge.

Makes 2 servings

I small red onion, very finely diced	10 sprigs dill, finely chopped
l tbsp avocado oil	Salt and pepper, to taste
6 eggs	2 stalks celery, finely chopped
4 heaping tbsp homemade mayo (see page 346)	l cup cooked peeled potato, diced

DIRECTIONS:

- 1. Fry the onion in avocado oil until soft.
- 2. Bring eggs covered in cold water to a boil in a large saucepan; let simmer for 6 minutes, then carefully drain and place the pan in the sink.
- 3. Run cold water over the eggs for 1 minute, then refill the pan with cold water and let it stand for about 10 minutes until the eggs have cooled down completely. Peel the shells off, carefully cut each egg into ¼-inch pieces, and place them in a bowl.
- 4. Mix together the mayonnaise and dill and gently mix into the eggs. Fold the celery, potato, and red onion into the egg mixture. Season with salt and pepper.

Nutrition facts per one serving: 48g fat, 23g protein, 26g total carbs, 3g fiber, 620 calories, 70% fat, 15% protein, 15% carbs

Keto variation:

Replace potatoes with 1/2 cup sliced cucumber.

Nutrition facts per one serving: 48g fat, 21g protein, 8g total carbs, 2g fiber, 540 calories, 80% fat, 26% protein, 4% carbs

Customize your protein: 1 egg = 6 grams protein

Chicken Wraps with Celery Root and Apple Salad

Plan ahead: Save the chicken thighs from the roast chicken for this meal. Precook the celery root and chill.

Makes 2 servings

- I tbsp duck fat
- I cup raw spinach
- 2 cooked chicken thighs, meat removed from the bone and sliced
- 6-8 large leaves of iceberg lettuce
- I cup sliced cucumber

DIRECTIONS:

- 1. Heat the duck fat in a frying pan, add the spinach and sliced chicken, stir-fry for 1–2 minutes until the chicken is slightly warm (if it's too hot, it might make the lettuce soggy).
- 2. Place the mixture onto the lettuce leaves.
- 3. Top with the sliced cucumber, wrap up, and enjoy.
- 4. Serve with the celery root and apple salad (recipe below).

Celery Root and Apple Salad

Makes 2 servings

l cup celery root, peeled, cut into	3 tbsp lemon juice
¹ / ₂ -inch cubes	Salt and pepper, to taste
5 tbsp olive oil, divided	I small apple, halved and thinly
15 sprigs fresh parsley, finely	sliced
chopped	

DIRECTIONS:

- 1. Toss the celery root with 1 tablespoon olive oil, and bake on parchment paper at 425°F for 10-15 minutes, or until tender. Cool and chill in fridge.
- 2. Mix 4 tablespoons olive oil, parsley, and lemon juice.

3. Season with salt and pepper and toss with the apple and celery root.

Nutrition facts per one serving: 58g fat, 32g protein, 17g total carbs, 4g fiber, 700 calories, 74% fat, 18% protein, 8% carbs

Keto variation: Chicken Wraps with Artichoke Tapenade

Substitute the artichoke tapenade for the celery root and apple salad. Toward the end of heating the chicken and spinach, add tapenade to the mix.

Artichoke Tapenade

Makes 2 servings

3 tbsp olive oil

3 artichoke hearts, chopped

I tbsp lemon juice

4 Kalamata olives

2 tsp herbes de Provence

DIRECTIONS:

1. Blend all the ingredients to a smooth texture (an immersion blender works best for this small quantity) and add salt if needed.

Nutrition facts per one serving: 56g fat, 31g protein, 10g total carbs, 5g fiber, 650 calories, 77% fat, 19% protein, 4% carbs

Carnivore variation: Shredded Chicken

Makes I serving

3 tbsp duck fat 2 boneless chicken thighs Salt, to taste

DIRECTIONS

- 1. Heat the duck fat in a frying pan. Use two forks or your hands to shred the leftover chicken from the bones. This will make it easier for the fat to be absorbed into the meat.
- 2. Reheat the meat while stirring for a few minutes, season with salt, and serve.

Nutrition facts per one serving: 60g fat, 53g protein, 0g total carbs, 0g fiber, 760 calories, 72% fat, 28% protein, 0% carbs

Herb Pizza with Chermoula

Makes 2 servings

9 oz ground lamb2 cloves garlic, minced2 sprigs fresh rosemary, finely choppedSalt and pepper, to taste I small sweet potato (4 oz)

2 tbsp lard

I small yellow onion, sliced (4 oz)

I cup mushrooms (3 oz), sliced

I serving chermoula (recipe below)

DIRECTIONS:

- 1. Preheat oven to 350°F.
- 2. Mix the ground lamb well with garlic, rosemary, salt, and pepper.
- 3. With your hands, press the mixture as thinly as you can onto a baking pan lined with parchment paper.
- 4. Bake for about 10 minutes until lightly brown.
- 5. Use a julienne peeler to cut the sweet potato into long strips. You can also just chop it finely.
- 6. Heat the lard in a frying pan and fry the onion, sweet potato, and mushrooms to your preferred doneness. Season well with salt and pepper.
- 7. When the meat base is cooked, spread 1 serving of chermoula onto it and top with the vegetables.

Chermoula

This sauce can be used to add flavor and nutrients to many different dishes. It's a very forgiving recipe—just tweak and modify until you find your "sweet spot." It tastes best after the flavors have time to fuse.

One serving contains 200 calories and only 1 gram of net carbs—but 21 grams of healthy fat.

Makes 4 servings (use 1 serving for this recipe and store the rest in the fridge or freezer)

- 2 cloves garlic, chopped
- 6 tbsp olive oil, divided
- ¹/₂ bunch fresh cilantro leaves, chopped (1 oz)
- 1/2 bunch fresh parsley (1 oz), about 20 sprigs

1/4 bunch fresh mint (1 oz)1 tbsp lemon juice1 tbsp lemon peelSalt and pepper, to taste

DIRECTIONS:

 Sauté the garlic in 1 teaspoon olive oil until soft. Let cool. Combine all ingredients into a blender and pureé. It will appear rather runny, but it becomes a firm paste once you put it in the fridge for a few minutes (depends on what you prefer).

Nutrition facts per one serving: 53g fat, 27g protein, 21g total carbs, 5g fiber, 660 calories, 72% fat, 17% protein, 11% carbs

Keto variation:

Increase mushrooms to 2 cups.

Swap the onion for 8 chopped artichokes (from 8 oz jar).

Omit the sweet potato.

Nutrition facts per one serving: 53g fat, 26g protein, 7g total carbs, 3g fiber, 600 calories, 80% fat, 18% protein, 2% carbs

Lickety Split Lamb Stir-Fry (carnivore)

Makes I serving

2 tbsp tallow

loz bone broth

10oz lamb rump steak, sliced across the grain in $^{1\!\!/_2}$ -inch strips

Salt and pepper, to taste

DIRECTIONS:

- 1. Melt the tallow in a frying pan and add a splash of bone broth.
- 2. When the broth is boiling, add the lamb and stir-fry for 2-3 minutes or until it's cooked to your taste. Season well and serve.

Nutrition facts per one serving: 58g fat, 58g protein, 0g total carbs, 0g fiber, 750 calories, 72% fat, 28% protein, 0% carbs

Customize your protein: 1 oz lamb rump = 6 grams

Creamy Salmon Vegetable Soup

Plan ahead: Make extra salmon parcels at dinner on day 5.

Makes 2 servings

- 4 tbsp lard
- I small leek (3 oz), including the green part, roughly chopped
- I cup broccoli (3 oz), chopped
- I medium parsnip (6 oz), chopped
- 2 small zucchini (8 oz), chopped

- 2 cups bone broth
- 2 tsp salt
- 1/2 tsp ground black pepper
- 2 medium salmon fillets, precooked
- 10 sprigs fresh cilantro leaves, chopped

DIRECTIONS:

- 1. Heat the lard over medium heat and gently fry the leek until softened, about 3 minutes.
- 2. Add the other vegetables and the bone broth. Season with salt and pepper.
- 3. Bring to a boil then immediately reduce heat. Simmer for 15 minutes. Blend the soup well in a food processor and return it to the pan.
- 4. Flake the salmon and add it to the soup. Cook for another 5 minutes to heat through, garnish with cilantro, and serve. If you prefer a very creamy texture, you can add the salmon in before blending.

Nutrition facts per one serving: 45g fat, 32g protein, 29g total carbs, 9g fiber, 630 calories, 63% fat, 22% protein, 15% carbs

Keto variation:

Replace the parsnip with 3 celery stalks.

Nutrition facts per one serving: 44g fat, 32g protein, 14g total carbs, 5g fiber, 560 calories, 71% fat, 23% protein, 6% carbs

Ribeye!

Makes I serving

I ribeye steak, I" thick (about 10 oz) 2 tbsp tallow I-2 tsp salt

DIRECTIONS:

- 1. Bring the meat to room temperature—this will make all the difference!
- 2. Pat dry and rub the steak generously with 1 tablespoon tallow—this will form the amazing crust that we're looking for. You can also marinate the steak overnight. Season with salt.
- 3. Add the rest of the tallow to your skillet (a deep frying pan) and make sure it is smoking hot before putting in the steak. Stand back to avoid any splatter.
- 4. For a medium-rare steak, sear the meat for about 12 minutes, turning about 1 minute before the halfway point. You can use a meat thermometer (see details below) to cook the steak to your preference. Pierce it into the side of the steak and monitor the temperature.
- 5. Take the steak off the stove before it reaches your desired internal temperature as it will continue to rise as it rests.
- 6. Rest your steak for 5 minutes before serving, covering lightly with parchment paper. This ensures the juices are reabsorbed back into the meat. This step is a "must" for any protein you cook hard and fast.

Doneness	Remove from heat at	After resting
Rare	II8°F	120°F
Medium rare	125°F	130°F
Medium	136°F	140°F
Medium-well	143°F	150°F

Temperature guidelines (Source: https://steakschool.com/learn/steak-temperature-chart/)

Nutrition facts per one serving: 75g fat, 50g protein, 0g total carbs, 0g fiber, 875 calories, 77% fat, 23% protein, 0% carbs

Salmon-Stuffed Portobellos

Plan ahead: Cook sweet potato the night before.

Makes 2 servings

2 tbsp duck fat	l small sweet potato (4 oz)
2 cloves garlic, minced	(precooked and thickly sliced)
4 large (or 6 smaller) portobello	4 tbsp homemade mayo
mushrooms (12 oz)	(see page 346)
l six-oz can red wild salmon,	Salt and pepper, to taste
drained	4 sprigs fresh dill, chopped

DIRECTIONS:

- Heat the duck fat in a frying pan over medium heat, then add the garlic and mushrooms, top side down. Cover and gently cook for 5 minutes, stirring occasionally to avoid burning the garlic and to make sure the mushrooms don't stick to the bottom of the pan.
- 2. Flip the mushrooms and cook an additional 5 minutes.
- 3. Blend the salmon using a hand blender or food processor. Make sure there are no bones. Add the sweet potato and blend in.
- 4. Gently fold the mayonnaise into the salmon/sweet potato mixture and mix well. Season to taste.
- 5. Flip the mushrooms top-side down, fill with the salmon mix, and leave the filled mushrooms in the covered pan for another 5 to 10 minutes to heat the filling. They may also be heated in the oven if you prefer them hotter.

6. Decorate with the dill for color and serve.

Nutrition facts per one serving: 55g fat, 31g protein, 18g total carbs, 2g fiber, 680 calories, 72% fat, 18% protein, 10% carbs

Keto variation:

Swap the sweet potato for $\frac{1}{2}$ avocado (2.7 oz).

Nutrition facts per one serving: 60g fat, 31g protein, 12g total carbs, 3g fiber, 690 calories, 78% fat, 18% protein, 4% carbs

Customize your protein: 1 oz canned wild salmon = 6 grams protein

Salmon Muffins (carnivore)

Makes I serving

- 4 tbsp duck fat
- I 6 oz-can wild salmon, in brine, drained
- I tsp salt

DIRECTIONS:

- 1. Preheat oven to 325°F.
- 2. Mix all ingredients in a blender until smooth.
- 3. Place the mixture in a silicone muffin pan and bake for a maximum of 20 minutes to avoid drying out.
- 4. Season with salt to taste and serve.

Nutrition facts per one serving: 63g fat, 60g protein, 0g total carbs, 0g fiber, 800 calories, 71% fat, 29% protein, 0% carbs

Customize your protein: 1 oz canned wild salmon = 6 grams protein

DINNERS

Lemony Chicken with Green Olives and Mixed Leafy Salad

Makes 4 servings

- 8 boneless chicken thighs, with skin (about 3 oz each, seasoned well with salt and pepper)
- 2 tbsp duck fat2 medium onions, chopped or sliced
- l tsp salt
- I/4 tsp ground black pepper

Pinch of saffron (optional) 1/2 cup bone broth 3/4 cup pitted olives 2 lemons, peeled and sliced 20 sprigs fresh chopped parsley

20 sprigs fresh chopped cilantro

DIRECTIONS:

- 1. Preheat oven to 350°F.
- 2. Use a covered pot that can be transferred from stove top to oven for this. Brown chicken skin-side down in duck fat over medium-high heat. Remove from the pan and set aside.
- 3. Reduce heat to medium, add onions, cover, and sweat for 5 minutes.
- 4. Add the salt, pepper, and saffron, stirring well, then return the chicken to the pot and add broth, olives, and lemons. Bring to a simmer, then cover and transfer to the oven for another 40 minutes.
- 5. Prepare the side salad and dressing (recipe below).
- 6. When the chicken is done, uncover and stir in parsley and cilantro. Spoon the sauce over the chicken to serve.

Mixed Leafy Salad with Vinaigrette

I clove garlic, finely chopped
4 tbsp extra virgin olive oil, divided
2 tbsp apple cider vinegar
I tbsp fresh lemon juice
I/4 tsp salt
Pinch of pepper

- 2 tsp thyme, fresh or dried
- I head of butterhead lettuce, washed and shredded
- I/2 cup grated cooked beets
- I pomegranate, seeds only

DIRECTIONS:

- 1. Sauté garlic in 1 tablespoon olive oil until soft. Let cool.
- 2. Put remainder of olive oil, apple cider vinegar, lemon juice, garlic, salt, pepper, and thyme in a blender and process into a smooth vinaigrette.
- 3. In a large bowl, gently toss lettuce and beets.
- 4. Pour the vinaigrette over the vegetables, toss well, and top with pomegranate seeds before serving.

Nutrition facts per one serving: 50g fat, 26g protein, 23g total carbs, 6g fiber, 620 calories, 72% fat, 17% protein, 11% carbs

Keto variation (for salad only-chicken dish is the same):

Omit the beetroot and pomegranate. Add ½ medium cucumber, sliced or cubed. Add ½ avocado, cubed.

Nutrition facts per one serving: 52g fat, 25g protein, 13g total carbs, 5g fiber, 600 calories, 78% fat, 17% protein, 5% carbs

Customize your protein: 1 oz boneless chicken thigh = 8 grams protein

Chicken Thighs (carnivore)

Makes I serving

4 boneless chicken thighs (about 3oz each)

I tbsp duck fat

 $\frac{1}{2}$ cup bone broth

Salt and pepper, to taste

DIRECTIONS:

- 1. Preheat oven to 350°F.
- 2. You'll need a pot with a lid that you can transfer from the stove top to the oven. Brown the chicken thighs, skin side down, in the duck fat over medium-high heat.
- 3. Add the broth and bring to a simmer before transferring to the oven, lid on, for 40 minutes of roasting.

Nutrition facts per one serving: 69g fat, 51g protein, 0g total carbs, 0g fiber, 840 calories, 75% fat, 25% protein, 0% carbs

Customize your protein: 1 oz boneless chicken thigh = 8 grams protein

Pressure-Cooked Lamb Shoulder

Makes 4 servings

- 4 tsp coarse sea salt
- 2 cloves garlic, minced
- $^{1\!/_{2}}$ tsp ground black pepper
- ³/₄ cup lard, divided
- I lb lamb shoulder, cut into 1-inch dice
- I small red onion, sliced
- 2 tbsp fresh rosemary

- 2 tbsp dried sage or oregano
- 2 tsp dried thyme
- 2 cups organic bone broth
- 2 cups pumpkin, roughly chopped*
- 2 medium white potatoes (15 oz), peeled and quartered
- 2 cups mushrooms (6 oz), halved

DIRECTIONS:

- 1. Rub sea salt, garlic, and pepper into the meat—ideally 1 hour before cooking it.
- 2. Heat your pressure cooker to the "sauté" function and melt 3–4 tablespoons of the lard (or do this in a frying pan if your pressure cooker doesn't have this function).
- 3. Brown the diced lamb for about 5 minutes, add onions and herbs, and stir for another minute.
- 4. Pour in 1 cup of bone broth and deglaze the bottom of the pot. Add the pumpkin and potatoes to the mix and simmer for 5 minutes (until you're finished with step 5).
- 5. In a blender, process bone broth, mushrooms, and remaining lard until you have a smooth sauce, then add to pressure cooker.
- 6. Seal as per instructions and cook under pressure for 25 minutes. This recipe can also be made in a slow cooker on low for 8 hours to get the meat nice and tender.

* If pumpkin is not in season, you can substitute celery root, zucchini, or another type of squash of similar carbohydrate content.

Nutrition facts per one serving: 59g fat, 28g protein, 26g total carbs, 4g fiber, 740 calories, 72% fat, 15% protein, 13% carbs

Keto variation:

Omit the potatoes.

Nutrition facts per one serving: 59g fat, 26g protein, 8g total carbs, 2g fiber, 660 calories, 81% fat, 16% protein, 3% carbs

Carnivore variation:

Makes 2 servings

- 8 tsp coarse sea salt
- 4 tbsp lard
- I lb lamb shoulder, cut into 1-inch dice
- 2 cups bone broth

DIRECTIONS:

- 1. Rub plenty of coarse sea salt into the meat.
- 2. Heat your pressure cooker to the "sauté" function and melt the lard (you can use a frying pan if your pressure cooker doesn't have this function).
- 3. Brown the diced lamb for about 5 minutes.
- 4. Pour in the bone broth and deglaze by making sure nothing sticks to the bottom of the pot.
- 5. Cover and seal as per instructions, then cook under pressure for 25 minutes. This recipe can also be made in a slow cooker on low, allowing 8 hours for the meat to become tender.
- 6. Serve the meat in the broth.

If you're following the meal plan, save the second serving for lunch on day 3.

Nutrition facts per one serving: 66g fat, 48g protein, 0g total carbs, 0g fiber, 790 calories, 76% fat, 24% protein, 0% carbs

Customize your protein: 1 oz lamb shoulder = 5 grams protein

Roast Chicken

Makes 4 servings (and leftovers)

- 4 medium carrots, roughly chopped (8 oz)
- I large onion, quartered (9 oz)
- 2 cups Jerusalem artichokes, thickly sliced
- 4 cloves garlic, raw
- 10 sprigs fresh thyme
- I tbsp dried rosemary

I whole chicken (4 lb)
I lemon, halved
I tsp salt, more to taste
½ tsp ground black pepper
I tbsp red wine vinegar
½ cup bone broth

DIRECTIONS:

- 1. Preheat oven to 375°F.
- 2. Put the carrots, onions, Jerusalem artichokes, garlic, and herbs in the middle of a roasting pan. Place the chicken, breast side down, on top of the vegetables. Squeeze the lemon over the chicken, then put the lemon halves into the cavity of the chicken. Season with salt and pepper.
- 3. Cover the pan with parchment paper or aluminum foil and roast for 30 minutes, then remove the paper/foil and turn the oven down to 350°F.
- 4. Gently flip the chicken over, sprinkle with red wine vinegar, and pour the bone broth around the chicken and over the vegetables. Season again and cook for another 40 minutes.
- 5. Keep an eye on the vegetables so that they don't burn (you can remove them early and keep in a covered pan to stay warm).
- 6. Turn off the oven, open the door, and let the chicken rest 10 minutes covered with parchment paper or aluminum foil. The legs should move about freely and when sliced between the leg and breast, the juices should run clear.
- 7. Remove the two thighs (leave the skin on) and save for lunch on day 4. Carve and remove the chicken breasts, remove the wings, and debone the rest of the meat (with the skin) for this dinner.
- 8. Serve the chicken and vegetables with some of the broth and rendered chicken fat from the baking pan.

Nutrition facts per one serving: 49g fat, 37g protein, 29g total carbs, 5g fiber, 700 calories, 63 fat, 21% protein, 16% carbs

Keto variation:

Replace the onion with 2 large, chopped spring onions (2 oz).

Replace Jerusalem artichokes with 2 halved bulbs of fennel, sliced (1 lb).

Nutrition facts per one serving: 46g fat, 32g protein, 17g total carbs, 7g fiber, 610 calories, 68% fat, 21% protein, 11% carbs

Customize your protein: 1 boneless chicken thigh (3 oz) = 20 grams protein; 1 chicken breast (5 oz) = 42 grams protein; 1 chicken wing (2 oz) = 14 grams protein

Carnivore variation: Roast Chicken

Makes 4 servings (and leftovers)

I whole chicken (4 lb) Salt, to taste ½ cup bone broth

DIRECTIONS:

- 1. Preheat oven to 375°F.
- 2. Place the chicken, breast side down, in a baking tray. Season generously with salt.
- 3. Cover the tray with parchment paper or aluminum foil and roast for about 30 minutes, then remove the paper and reduce the temperature to 350°F.
- 4. Gently tilt the baking tray and drain the rendered chicken fat into a glass jar. Flip the chicken over and pour the bone broth around the chicken. Season again and cook for another 40 minutes.
- 5. Turn off the oven, open the door, and let the chicken rest for 10 minutes while covered with parchment paper or aluminum foil. The legs should move about freely and if you slice between the leg and the breast, the juices should run clear.
- 6. Carefully remove the two thighs (leave the skin on) and save for lunch on day4. Carve the chicken breasts, remove the wings, and debone the rest of the meat (with the skin).
- 7. Serve a 4 oz-piece of chicken breast alongside one of the wings. Carve them into slices and serve in the broth with the rendered chicken fat.

Nutrition facts per one serving: 56g fat, 52g protein, 0g total carbs, 0g fiber, 710 calories, 70% fat, 30% protein, 0% carbs

Spaghetti Bolognese

Makes 4 servings

Bolognese Sauce

4 tbsp olive oil	I tsp dried thyme
I lb ground lamb	l tsp dried oregano
I medium red onion, chopped (7 oz)	Salt and pepper, to taste
2 cloves garlic, minced	2 cups mushrooms (6 oz), halved
2 celery stalks, chopped	l small beet (3 oz), chopped
5 medium carrots, grated (10 oz)	l cup bone broth
l tsp dried rosemary	

DIRECTIONS:

- 1. Heat olive oil in a large frying pan over high heat. When hot, add the lamb and fry on high for 2–3 minutes.
- 2. Reduce heat to medium, add the onions, garlic, celery, carrots, herbs, and salt and pepper; cover pan.
- 3. Process the mushrooms, beet, and bone broth in a food processor until smooth, then add this sauce to the ground lamb and mix well.
- 4. Simmer the Bolognese sauce on medium-low heat for another 15–20 minutes. Season to taste with salt and pepper and serve with noodles (recipe below).

Noodles

4 medium zucchini (1 ¾ lb)	
2 tbsp tallow	

I tbsp fresh lemon juice Salt and pepper, to taste

DIRECTIONS:

- 1. Using a spiralizer or a julienne peeler, cut the zucchini into strips.
- 2. Heat the tallow gently in a large saucepan, then add the zucchini noodles and stir fry for about 10 minutes over medium heat. Squeeze the lemon juice over the noodles, season to taste, and serve with the Bolognese sauce.

Nutrition facts per one serving: 62g fat, 28g protein, 21g total carbs, 8g fiber, 730 calories, 76% fat, 16% protein, 8% carbs

Keto variation:

Use only 2 carrots in the Bolognese sauce.

Reduce the zucchini to 3 medium for the noodles.

Nutrition facts per one serving: 61g fat, 26g protein, 14g total carbs, 5g fiber, 690 calories, 79% fat, 15% protein, 6% carbs

Customize your protein: 1 oz ground lamb = 5 grams protein

Beefy Lamb Burgers (carnivore)

These burgers can be made with all beef, all lamb, or a mixture of the two for a more complex flavor. If both meats are used, increase the serving size to two and double the tallow.

Makes I serving (2 patties)

10 oz ground beef (20 percent fat)
or—
9 oz ground lamb, (15 percent fat)
Kosher salt, to taste
1 tbsp tallow

DIRECTIONS:

- 1. Gently form two patties, taking care not to overwork the meat, which can lead to a tougher burger. Season liberally with salt.
- 2. Heat a cast iron pan on high heat until it just starts to smoke; add the tallow and the patties. Reduce heat to medium-high and let a crust form on the burger (about 3 minutes). Flip and finish cooking to your preferred doneness (see page 358 for temperature guidelines).

Nutrition facts per one serving: 69g fat, 49g protein, 0g total carbs, 0g fiber, 820 calories, 76% fat, 24% protein, 0% carbs

Customize your protein: 1 oz ground beef or lamb = 5 grams protein

Ultramoist Salmon Parcels

Makes 4 servings

- 1/2 small head cauliflower (10 oz)
- 4 small sweet potatoes
- l clove garlic, raw
- $\frac{1}{2}$ cup duck fat
- 4 medium salmon fillets, with skin (5 oz each)
- (5 oz each) 8 fresh basil leaves

12 fresh sprigs of cilantro
1 lime, quartered
2 tbsp lime juice
4 tbsp olive oil
2 tsp salt (or more to taste)
½ tsp ground black pepper

DIRECTIONS:

- 1. Preheat oven to 375°F.
- 2. Chop the cauliflower and sweet potatoes into small chunks. Put them onto a baking sheet with the garlic, generously season with salt and pepper, and cover with duck fat. Bake for 20 minutes, stirring occasionally.
- 3. Put each salmon fillet onto a large rectangle of parchment paper. The salmon pieces should be long and skinny so you're able to fold them over. Stuff each fillet with a couple of basil leaves, three sprigs of cilantro, and a slice of lime.
- 4. Sprinkle each fillet with a little lime juice and one tablespoon of olive oil, and season well with salt and pepper. Wrap them up in parchment paper and tie loosely with string if needed.
- 5. Place the parcels in a baking pan, sprinkle them with 3–4 tablespoons water, and bake for 10–15 minutes. If you'd like them to be "rare" in the middle, let them cook for about 10 minutes. If you prefer them well done, bake for 15–20 minutes. They will be tender and moist either way.
- 6. Serve a salmon parcel with the roasted vegetables.

Nutrition facts per one serving: 49g fat, 34g protein, 22g total carbs, 4g fiber, 650 calories, 67% fat, 21% protein, 12% carbs

Keto variation:

Increase the cauliflower to 1 small head (20 oz).

Swap the sweet potato for 3 cups of mushrooms.

Nutrition facts per one serving: 49g fat, 36g protein, 10g total carbs, 4g fiber, 610 calories, 72% fat, 24% protein, 4% carbs

Customize your protein: 1 oz salmon fillet = 6 grams protein

Carnivore variation:

Makes I serving

- 2 medium salmon fillets, with skin (5 oz each)
- 2 tbsp duck fat
- I tsp salt

DIRECTIONS:

- 1. Preheat oven to 375°F.
- 2. Put the salmon fillets onto a large rectangle of parchment paper. The salmon pieces should be long and skinny so you're able to fold them over.
- 3. Mix the duck fat and salt—if the duck fat is too solid, gently melt it in a pan.
- 4. Spread the fat evenly onto the two fillets. Wrap them up in the parchment paper and secure loosely with string if needed.
- 5. Place the parcels in a roasting pan, sprinkle with some water (3–4 table-spoons), and bake for 10–15 minutes before serving.

Nutrition facts per one serving: 61g fat, 58g protein, 0g total carbs, 0g fiber, 770 calories, 70% fat, 30% protein, 0% carbs

Roasted Pork Belly with Stir-Fry

Pork belly is one of the fattiest cuts of meat and the protein content is much lower. You can modify this by using skinless pork belly (see protein calculations below).

Makes 4 servings

Zest of 4 lemons 4 +1 cloves garlic, minced A handful of fresh parsley, finely chopped 1¹/₄ lb pork belly, raw Salt and pepper, to taste I small red onion (2 oz), chopped 5 cups Chinese cabbage (15 oz), finely shredded

- I large sweet potato (10 oz), diced into small cubes (about ½-inch)
- I tbsp fresh chives, finely chopped
- I tbsp dried thyme

DIRECTIONS:

- 1. Preheat oven to 450°F.
- 2. Blend lemon zest, 4 cloves of garlic, and parsley together to make a gremolata. Season the pork belly with salt and pepper, then cover with a layer of gremolata. Roll the belly up like a Swiss roll and tie it tightly with string in the middle and at the two ends to secure.
- 3. Roast for 45 minutes, then reduce heat to 275°F and roast for two more hours.
- 4. Forty minutes before the meat is done, transfer some of the rendered pork fat to a frying pan and gently fry the onion and remaining clove of garlic. Add the cabbage and sweet potato to the pan, mix everything well, and cook for 30 minutes on low, covered, stirring occasionally.
- 5. Season with salt and pepper and add the herbs toward the end. Serve with a portion of the pork belly.

Nutrition facts per one serving: 79g fat, 17g protein, 20g total carbs, 4g fiber, 850 calories, 83% fat, 8% protein, 9% carbs

Keto variation:

Add an extra 2 cups of shredded cabbage (7 cups total). Omit the sweet potato. Nutrition facts per one serving: 794g fat, 16g protein, 7g total carbs, 3g fiber, 790 calories, 89% fat, 8% protein, 3% carbs

Customize your protein: 1 oz pork belly = 3 grams protein (15 grams fat); 3 oz skinless pork belly = 6 grams protein (3 grams fat)

Crackling-Top Pork Belly (carnivore)

Plan ahead: Dry the pork belly with a paper towel, score the skin with a sharp knife, and leave uncovered in the fridge overnight to dry out the skin.

Makes 4-5 servings

I¹/₄ lbs pork belly2 tsp saltI¹/₂ cup bone broth

DIRECTIONS:

- 1. Preheat oven to 475°F.
- 2. Season the pork belly with plenty of salt, massaging it well into the meat.
- 3. Place the pork into a roasting pan, skin side up. Roast for 40–50 minutes, checking occasionally after 30 minutes to ensure it doesn't get too brown. The crackling should be golden and super crunchy.
- 4. Reduce the oven to 300°F and place the pork directly on the top rack of the oven. Make sure you put an empty tray under the pork to catch the juices.
- 5. Cook the meat for another 2–4 hours. After 2 hours, the meat will be soft and easy to carve; after 4 hours, the meat will be soft enough for "pulled pork."
- 6. To serve, heat the broth with some of the pork drippings to use as a dipping sauce.

If you're following the meal plan, be sure to set aside some of the rendered pork fat for breakfast on day 7.

Macros for this recipe are based on 4 oz pork belly with skin or 5 oz skinless pork belly.

Nutrition facts per one serving: 74g fat, 40g protein, 0g total carbs, 0g fiber, 830 calories, 80% fat, 20% protein, 0% carbs

Customize your protein: 3 oz pork belly = 8 grams protein (fat = 45 grams); 3 oz skinless pork belly = 17 grams protein (fat= 8 grams) Makes 4 servings (about 12 liver "muffins")

15 oz chicken liver	2 small onions (4 oz)
4 eggs	l tsp salt
½ cup duck fat (3 oz)	1⁄4 tsp ground black pepper
4 tbsp olive oil	l tsp dried thyme
l medium apple (6 oz)	

DIRECTIONS:

- 1. Preheat oven to 325°F. Put all ingredients into a strong blender and pulse until you have a smooth, fairly liquid paste.
- 2. Pour into a silicone 12-muffin pan and bake for 15–25 minutes. If you don't have a muffin pan, you can use a small baking dish lined with parchment paper. The mixture will be spread a bit thinner and will take less time to bake.
- 3. Invert the liver cakes onto a plate and serve with the Pomegranate, Mint, and Fennel Salad.

Pomegranate, Mint, and Fennel Salad

4 tbsp olive oil 2 bulbs fennel (6 oz), finely sliced	12 heaped tbsp pomegranate seeds (about 2 small pomegranates [12
across the width of the bulb	oz])
I head of celery (about 7 stalks),	Salt and pepper, to taste
finely chopped	15 sprigs fresh mint, chopped
	20 sprigs fresh tarragon, chopped
	Juice of I lemon

DIRECTIONS:

- 1. Heat the olive oil in a frying pan and gently cook the fennel and celery for 15 minutes or until soft. Allow to cool.
- 2. Mix with the pomegranate seeds and herbs, then top the salad with the lemon juice and serve.

Nutrition facts per one serving: 59g fat, 28g protein, 22g total carbs, 7g fiber, 690 calories, 76% fat, 16% protein, 8% carbs

Keto variation:

For the liver cakes, swap the medium apple for a small one (3 oz).

For the salad, omit the pomegranate seeds and swap the lemon juice for 3 tablespoons apple cider vinegar.

Nutrition facts per one serving: 59g fat, 27g protein, 11g total carbs, 4g fiber, 660 calories, 81% fat, 16% protein, 3% carbs

Customize your protein: 1 oz chicken liver = 5 grams protein

Lamb and Liver Stir-Fry (carnivore)

Makes I serving

- I tbsp tallow
- 5 oz ground lamb
- 5 oz lamb, beef, or calf liver, sliced
- l tsp salt

DIRECTIONS:

- 1. Heat the tallow in a pan and fry the ground lamb over medium heat.
- 2. When it's browned, add the sliced liver and stir-fry for no more than 3–5 minutes. Do not overcook so that the liver stays nice and tender.
- 3. Season well with salt and serve.

Nutrition facts per one serving: 62g fat, 53g protein, 0g total carbs, 0g fiber, 770 calories, 72% fat, 28% protein, 0% carbs

Customize your protein: 1 oz ground lamb = 5 grams protein; 1 oz lamb liver = 6 grams protein

Slow-Cooked Chicken

Tossing a chicken in the slow cooker is a great trick for lightening the cooking burden for the week. You can either enjoy it on its own or use it as the foundation for multiple meals, such as the Chick-adoo Breakfast, the Chicken Wraps, and the Shredded Chicken. You will also have plenty of lovely chicken stock that you can freeze in batches.

Makes 4 servings (and leftovers)

I tbsp duck fat
I whole chicken (4 lb)
I tbsp dried rosemary
3 tsp salt
4 tbsp fresh rosemary

DIRECTIONS:

- Heat the duck fat in the slow cooker and brown the chicken using the "fry" function. (If your slow cooker doesn't have this feature, use a frying pan and then transfer the browned chicken to the slow cooker.) Season well with salt.
- 2. Cover the chicken with water and add the rosemary. Cover with the lid and cook overnight for at least 6–8 hours on low heat. Check that the chicken is fully cooked by wiggling the wing—it should be very loose. The chicken should be very tender and juicy—the flesh should easily come off the bones.

Nutrition facts per one serving: 56g fat, 52g protein, 0g total carbs, 0g fiber, 710 calories, 70% fat, 30% protein, 0% carbs

Appendix A

Recommended Tests

Laboratory Tests

- **Fasting*** comprehensive metabolic panel (CMP), which includes a fasting glucose. The CMP includes tests of acid-base balance, electrolyte balance, kidney function, and liver function.
- Fasting* lipid panel (aka "cholesterol check")
- Hemoglobin A1C: This is an estimate of your average blood glucose levels over the past three months.
- Vitamin B12: Levels below 220 pg/ml indicate deficiency. Levels above 500 pg/ml are ideal (note that this cutoff is much higher than the cutoff listed on standard lab reports). If your level falls between 220 and 500, your B12 status is questionable and needs further evaluation, in which case you should get a methylmalonic acid (MMA) level. A normal MMA (below 270 nmol/l) is reassuring that you have enough functional B12 in your system. An elevated MMA (above 370 nmol/l) suggests B12 deficiency. If your B12 level is low despite plenty of nutritious animal foods, consult with your health care practitioner. Many common health conditions and medications can interfere with B12 processing and absorption.
- Serum ferritin: This test can detect iron deficiency in its earliest stages, before it advances to anemia. Ferritin should be at least 100 ng/ ml, a cutoff that differs from the normal range listed on standard lab reports.¹ If your level is below 100, you are running low on iron. A ferritin level two to three times the upper limit of normal is a common

*Note: fasting means nothing by mouth except water and medicines for 12–14 hours prior to the blood draw—no caffeine, no diet beverages, etc.

sign of insulin resistance,² and extremely high levels may indicate hemochromatosis (an iron storage disease).³

- **Thyroid function tests**: These may include TSH, T3, T4, free T3, free T4, anti-thyroid peroxidase antibody (anti-TPO), and anti-thyroglobulin antibody (TgAb) tests. These can be complicated to interpret, so if any of these are abnormal, consult with your physician. Note that levels of T3 (active thyroid hormone) tend to go down on ketogenic diets but this is unlikely to signal impaired thyroid function or impending hypothyroidism.⁴
- **C-reactive protein (CRP)**: This is a test for inflammation. Below 1.0 mg/ml is ideal.
- **Complete blood count (CBC)**: This tests for anemia, inflammation, and immune system problems.
- **Fasting vitamin B6**: This is a common and easily correctable nutrient deficiency. Levels above 30 nmol/l indicate adequate B6 status.
- **Homocysteine**: This tests for problems in pathways related to vitamin, amino acid, neurotransmitter, and antioxidant metabolism. Many things can cause a high homocysteine level, so if your level is too high (above 15 µmol/l), please consult with your health care practitioner.
- **Free carnitine**: If your carnitine level is low, you will have trouble burning fat for energy.
- **Celiac screening panel** (if not done in the past three years): This includes tissue transglutaminase IgA (anti-tTg) and total serum IgA tests.
- **Medication levels**: If you are taking any of the medications below, please have the level checked before you change your diet, especially if you move beyond the paleo diet to a low-carbohydrate, ketogenic, or carnivore diet.
 - lithium
 - clozapine
 - tricyclic antidepressants
 - anticonvulsant mood stabilizers (valproate, lamotrigine, etc.)⁵

Additional tests may be helpful depending on your personal health circumstances. Consult your health care professional.

Mental Health Self-Assessment Questionnaires

I recommend filling these out shortly before you begin your new diet and then again six to twelve weeks later. Assessment tools like these leave much to be desired, so if a question seems strange or doesn't seem to apply to you, you can either skip it or write in how you feel. After the first time you use them, you can ignore the time frames suggested on the tops of the questionnaires and simply use the previous week as your time frame instead.

- Modified Yale Food Addiction Scale-2.0 (MYFAS-2.0) https://sites.lsa .umich.edu/fastlab/yale-food-addiction-scale/
- Altman Self-Rating Mania Scale (ASRM) https://psychology-tools.com /test/altman-self-rating-mania-scale
- Adult ADHD Self-Report Scale (ASRS) https://www.apaservices.org /practice/reimbursement/health-registry/self-reporting-symptom-scale.pdf
- Beck Depression Inventory (BDI) https://www.ismanet.org /doctoryourspirit/pdfs/Beck-Depression-Inventory-BDI.pdf
- Eating Disorder Diagnostic Scale (EDDS) http://www.ori.org/files /Static%20Page%20Files/EDDS.pdf
- Generalized Anxiety Disorder Assessment-7 (GAD-7) https://adaa.org /sites/default/files/GAD-7_Anxiety-updated_0.pdf
- Obsessive-Compulsive Inventory-Revised (OCI-R) https:// simpleandpractical.com/wp-content/uploads/2020/02/OCI-R.pdf
- Self-Administered Gerocognitive Exam (SAGE) test for cognitive impairment https://wexnermedical.osu.edu/brain-spine-neuro /memory-disorders/sage/download-the-sage-test

Appendix B

Selected Resources

You can find articles about nutrition science, ketogenic diets, and mental health on my website Diagnosis:Diet (https://www.diagnosisdiet.com).

General Nutrition Science and Metabolic Health

Big Fat Surprise by Nina Teicholz (Simon & Schuster, 2014) *Why We Get Sick* by Benjamin Bikman (BenBella Books, 2020) *Good Calories, Bad Calories* by Gray Taubes (Knopf, 2007) *Real Food for Pregnancy* by Lily Nichols (Lily Nichols, 2018) *The Obesity Code* by Jason Fung (Greystone, 2016)

Mental Health

Brain Energy by Christopher M. Palmer (BenBella, 2022) The Alzheimer's Antidote by Amy Berger (Chelsea Green, 2017) Grain Brain by David Perlmutter (Rev. ed. Little Brown Spark, 2018) The End of Alzheimer's by Dale E. Bredesen (Avery, 2017) Answers to Anorexia by James M. Greenblatt (2nd ed. Friesen Press, 2021)

Paleo Diets

The Paleo Diet by Loren Cordain (Wiley, 2011) *It Starts with Food* by Hartwig Dallas and Melissa Urban (Victory Belt, 2014) *The Paleo Solution* by Robb Wolf (Victory Belt, 2017)

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The Whole 30 by Melissa Hartwig Urban and Dallas Hartwig (Houghton Mifflin Harcourt, 2015) *Nom Nom Paleo* by Michelle Tam and Henry Fong (Andrews McMeel Publishing, 2013)

Ketogenic Diets

- Metabolic Mind (https://www.metabolicmind.org): A pioneering non-profit initiative launched by the Baszucki Group to share information and resources about the emerging field of metabolic psychiatry.
- The Virta Health blog (https://www.virtahealth.com/blog): Educational content produced by leading scientists in the field of metabolic health.
- The Charlie Foundation for Ketogenic Therapies (https://charliefoundation.org): A veteran nonprofit organization with a focus on epilepsy care.
- KetoMojo (http://www.keto-mojo.com): A content-rich website focused on ketogenic diets and ketone monitoring.
- The Levels Health mental health blog (www.levelshealth.com/blog/category/mental-health)

Ken Berry MD's YouTube channel (https://www.youtube.com/@KenDBerryMD) *Ketogenic Diet and Metabolic Therapies* by Susan A. Masino, ed. (2nd ed., Oxford, 2022) *Ketogenic Diet Therapies for Epilepsy and Other Conditions* by Eric Kossoff MD, et al. (7th ed. Demos Health/Springer, 2021)

Ketogenic edited by Timothy Noakes and Nutrition Network (Academic Press, 2023) *The Case for Keto* by Gary Taubes (Knopf, 2020)

COOKBOOKS

Maria Emmerich's collection of ketogenic cookbooks, especially *Easy Dairy-Free Ketogenic Recipes* (Victory Belt, 2018)

The Ketogenic Kitchen by Domini Kemp and Patricia Daly (Chelsea Green, 2016)

ATHLETIC PERFORMANCE

The Art and Science of Low Carbohydrate Performance by Jeff Volek and Stephen Phinney (Beyond Obesity, 2012)

CONTINUING EDUCATION RESOURCES FOR HEALTH PROFESSIONALS

- Ketogenic Diets for Mental Health clinician training program (https://www.diagnosisdiet.com/training) Taught by Dr. Georgia Ede; accredited for medical and nutrition professionals
- Ketogenic Therapeutics Mastery (https://www.ketomastery.pro) Taught by Beth Zupec- Kania, RD and Denise Potter, RDN; accredited by the Academy of Nutrition and Dietetics
- The European Keto- Live Centre (https://www.european-keto-live- centre.com) hosts live and recorded content focused on ketogenic metabolic therapies for noncommunicable diseases.
- The Metabolic Health Initiative (https://www.metabolicinitiative.com) hosts live and digital content focused on nutrition, metabolism, clinical care, and human performance.
- The Nutrition Network (nutrition-network.org) offers online trainings in low- carbohydrate nutrition for clinicians and coaches.
- The Society of Metabolic Health Practitioners (https://thesmhp.org) offers clinical consensus guidelines, professional resources, educational content, and a path to accreditation for low-carbohydrate practitioners.
- Treating Metabolic Syndrome, Type 2 Diabetes, and Obesity with Therapeutic Carbohydrate Restriction (https://www.dietdoctor.com/cme) is a free CME-course produced by Dr. Andreas Eenfeldt, Dr. Bret Scher, Dr. Adele Hite and Franziska Spritzler, RD, CDE.

CLINICIAN DIRECTORIES

The Ketogenic Diets for Mental Health Clinician Directory (https://www.diagnosisdiet.com/directory), created and hosted by Dr. Ede; limited to practitioners who use ketogenic diets to treat mental health conditions.

Diet Doctor's low-carb clinician directory: (https://www.dietdoctor.com/low-carb/doctors) Society of Metabolic Health Practitioners low-carb clinician directory: (https://thesmhp.org/directory)

MACRONUTRIENT CALCULATORS

Free online ketogenic diet calculators you can use to personalize your macronutrient ratios: Maria Mind Body Health (https://mariamindbodyhealth.com/new-keto-calculator) Keto-Mojo (https://keto-mojo.com/mymojomacros-keto-macro-calculator)

Carnivore Diets

Amber O'Hearn's website (https://www.mostly-fat.com/eat-meat-not-too-little-mostly-fat) Justmeat.co (https://www.justmeat.co): a compilation of carnivore resources *The Carnivore Diet* by Shawn Baker (Victory Belt, 2019) *The Carnivore Cookbook* by Maria Emmerich and Craig Emmerich (Victory Belt, 2020)

Miscellaneous

FOOD ADDICTION

Fork in the Road by Jen Unwin (FITR Publishing, 2021)

Food Junkies by Vera Tarman (2nd ed. Dundurn, 2019)

Bitten Jonsson, RN, Leg.SSK offers certification trainings in Holistic Addiction Medicine focused on food and sugar addiction (https://www.bittensaddiction.com/en/professional-training).

HISTAMINE INTOLERANCE

- "Freshness Counts: Histamine Intolerance" (https://www.diagnosisdiet.com/full-article/histamineintolerance)
- "Histamine Intolerance: Understanding the Science" (https://www.diagnosisdiet.com/full-article /histamine-intolerance-science)

CHOLESTEROL

- Lipid researcher Dave Feldman's website (https://cholesterolcode.com) educates, empowers, and supports people interested in understanding cholesterol testing
- David M. Diamond, Benjamin T. Bikman, and Paul Mason, "Statin Therapy Is Not Warranted for a Person with High LDL-Cholesterol on a Low-Carbohydrate Diet." *Current Opinion in Endocrinology, Diabetes, and Obesity* 29, no. 5 (2022): 497–511, https://doi.org/10.1097/MED .000000000000764.

ETHICAL AND ENVIRONMENTAL CONCERNS ABOUT MEAT

Defending Beef by Nicolette Hahn Niman (Rev. ed. Chelsea Green, 2021) *Sacred Cow* by Diana Rodgers and Robb Wolf (BenBella Books, 2020) *The Vegetarian Myth* by Lierre Keith (Flashpoint Press, 2009)

BMI CALCULATOR

CDC's Adult BMI Calculator: https://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/english _bmi_calculator/bmi_calculator.html

Appendix C

Essential Micronutrients and Brain Metabolism

As discussed in chapters 4 and 5, micronutrients are indispensable to the building and burning pathways that make up the miracle of brain metabolism. My goal in creating this resource was to help bring this generic list of players to life by describing the fascinating tasks each nutrient performs, paying special attention to the contributions each one makes to maintaining mental health.

Try not to think of this as a list of supplements—these are essential ingredients we are supposed to be able to obtain from our diets. We are best adapted to absorbing, utilizing, and achieving proper balance of these nutrients when we consume them in whole foods, not as isolated, concentrated extracts.

Vitamin A (retinol and related compounds): True vitamin A compounds (not to be confused with beta-carotene and similar compounds found in carrots and certain other colorful plant foods) belong to a family of fat-soluble hormones best known for their role in eye health, specifically for making both night vision and color perception possible.¹ Less commonly known is that vitamin A influences the genes involved in the growth and development of all cells, and therefore is crucial to the development and maintenance of the entire brain. Learning and memory also rely heavily on vitamin A to help connect neurons in new patterns to solidify knowledge.² Vitamin A deficiency in early life increases the risk for autism, and problems with vitamin A signaling may play a role in the development of schizophrenia. Vitamin A signaling can decline with age, contributing to cognitive deficits later in life.

The Busy B's: Even though they look nothing alike and have unique responsibilities, the B vitamins are often lumped together and referred to as "B complex," because they all serve as coenzymes (enzyme assistants) that help cells extract energy from food and assemble vital molecules, so they are indispensable to multiple burning and building pathways.³ We must consume foods rich in B

vitamins regularly because most of them can't be stored in our tissues, with the notable exception of vitamin B12, which we store in the liver. Since the brain is a high-energy organ, even brief deficiency of a single member of the B vitamin family can slow the brain's machinery and lead to vague, nonspecific psychiatric symptoms, such as fatigue, apathy, or insomnia.

Vitamin B1 (thiamine) helps make and break the bonds that hold molecules together. It plays essential roles in both glycolysis (Engine G) and the citric acid cycle (part of Engine M), and connects the two pathways by converting pyruvate to acetyl CoA. It also helps the pentose phosphate pathway to make DNA and RNA, and assists in the construction of the neurotransmitters acetylcholine, glutamate, and GABA. Since glucose processing requires thiamine, diets high in carbohydrate increase thiamine requirements. Deficiency remains widespread in parts of the world that rely heavily on starchy staples like rice and have poor access to thiamine-rich protein sources.⁴

Vitamin B2 (riboflavin) is an integral part of FAD, which carries electrons to the electron transport chain. Riboflavin helps build antioxidants and synthesize vitamin B3, and is also required to activate vitamins B6 and B9.⁵

Vitamin B3 (niacin) is an integral part of NAD, which is used by hundreds of enzymes to help transfer electrons between molecules. Severe, advanced niacin deficiency causes pellagra, a disease which can lead to depression, psychosis, delirium, and dementia.

Vitamin B5 (pantothenic acid) is an integral part of CoA (coenzyme A), which changes the shape of large molecules to help them undergo chemical reactions more easily. Vitamin B5 participates widely in metabolism but is particularly important to the assembly of components needed for growth and is required to activate folate (vitamin B9).⁶

Vitamin B6 (pyridoxine) is used by dozens of enzymes to help transfer carbon building blocks between molecules. Vitamin B6 is required for gluconeogenesis, amino acid processing, and to make vitamin B3, DNA, RNA, serotonin, dopamine, norepinephrine, and GABA.⁷

Vitamin B7 (biotin) helps add carbon building blocks to molecules, regulates gene activity, and supports gluconeogenesis, the production of blood glucose.⁸

Vitamin B9 (folate) supplies the carbon building blocks needed to help vitamin B12 make DNA, myelin, and certain neurotransmitters including serotonin, dopamine, and norepinephrine.⁹ Cells can't multiply without DNA, so folate requirements are much higher in times of rapid growth and development

(such as pregnancy), and in parts of the body that replenish cells frequently, such as the bone marrow where red blood cells are produced. This is why folate deficiency can cause anemia (low red blood cell count) and neural tube defects such as spina bifida. Flour and cereal fortification programs in many countries have helped prevent deficiencies, but these use synthetic folic acid rather than the natural folate found in foods. Best animal food source is liver; good plant sources include spinach, asparagus, and avocado.

Vitamin B12 (cobalamin): Whereas most B vitamins participate in dozens to hundreds of metabolic reactions, B12 serves only two enzymes, so we need very little B12 and it can take years to deplete our reserves. The first enzyme helps vitamin B9 (folate) move carbon building blocks between molecules to make neurotransmitters and DNA (which is why B12 deficiency, like folate deficiency, can cause anemia), and the other enzyme is used to build myelin.¹⁰ Vitamin B12 deficiency is not uncommon even in affluent countries, partly because so many medications and health conditions can interfere with B12 absorption, and partly because diets low in animal foods are becoming more prevalent. B12 deficiency can lead to a variety of psychiatric symptoms, including depression, psychosis, memory problems, and personality changes.¹¹ B12 is only found in animal foods; good sources include shellfish, fish, and red meat.

Vitamin C (L-ascorbic acid) is a coenzyme required to build collagen (a component of the blood-brain barrier), and helps regulate the production of myelin which insulates brain circuits.¹²

Vitamin D3 (cholecalciferol): Strictly speaking, vitamin D3 is not essential in the diet because your skin can produce it if exposed to enough sunlight. Vitamin D is a fat-soluble hormone that influences brain development, calcium balance, antioxidant defenses, and neuroplasticity—the creation of new neuron networks in response to new experiences, which is key to learning and memory.¹³ Vitamin D deficiency is very common, particularly in people with insulin resistance, and deficiency during pregnancy increases risk for autism.¹⁴ Good dietary sources include fish and pork.

Vitamin E (alpha-tocopherol) helps protect unsaturated fatty acids (MUFAs and PUFAs) from oxidative damage, helps maintain the shape of cell membranes, and regulates genes involved in protecting cell membrane function.¹⁵

Vitamin K1 helps add carbon groups to clotting proteins, allowing them to bind calcium and initiate the "coagulation cascade" to prevent uncontrolled bleeding.¹⁶

Vitamin K2 is a much-overlooked fat-soluble hormone that activates proteins involved in brain cell growth and survival and participates in the production of vital membrane fats (sphingolipids), including those needed to make myelin.¹⁷ Several different forms of K2 exist, but 98 percent of the K2 in the human brain exists in a form called MK-4.¹⁸ Best dietary sources are liver and egg yolks.

Calcium: Like a scout, calcium carries high-priority messages about energy demands, neurotransmitter supply, and cell health from the outer reaches of the neuron to deep inside the mitochondria and nucleus (the cell's command center) so they can rapidly adapt to changing circumstances.¹⁹ Glutamate and GABA receptors use calcium, and calcium signaling is critical for learning and memory (neuroplasticity), neurotransmitter release, and even cell survival. If the cell is in dire straits due to viral infection, lack of oxygen, or other serious threats, large amounts of calcium will rush in, initiating the cell's suicide program (apoptosis).²⁰

Chloride is the dominant negatively charged ion in the brain. It helps regulate fluid balance and cell volumes and cooperates with sodium to maintain neurons' readiness to fire.²¹

Choline: The vast majority of choline is used to make phosphatidylcholine, an essential component of cell membranes. Choline is also used to build myelin, DNA molecules, and the neurotransmitter acetylcholine. Choline was only recognized as an essential nutrient in 1998, so little is known about how deficiency affects mental health, but early studies suggest that choline deficiency may affect attention and memory, perhaps because acetylcholine is so important to these brain functions.²² Studies find that most people in the United States do not consume adequate choline; best sources are red meat, liver, eggs, and fish roe.

Copper: The electron t ransport c hain r elies o n c opper t o p ull electrons through one of its large enzyme complexes (cytochrome c oxidase) as it works to make ATP. The enzyme that transforms dopamine into norepinephrine depends on copper as well.²³

Iodine is an integral part of thyroid hormone, which is not only a major orchestrator of brain development in early life but also supports healthy brain metabolism throughout the life span.²⁴ Iodine deficiency causes hypothyroidism (low thyroid hormone activity); when this occurs during pregnancy, it can lead to irreversible cognitive deficits in the developing baby. Iodine deficiency is widespread, affecting up to two billion people, including in the United States and Europe, and is a leading cause of preventable intellectual disabilities world-wide.²⁵ In adults, hypothyroidism can cause symptoms of depression such as
apathy and fatigue, and can even cause reversible dementia, likely due in part to sluggish brain glucose metabolism.²⁶ Best food sources are fish, shrimp, seaweed, and iodized salt.

Iron: When we think of iron, we think of blood, but this mineral's responsibilities extend far beyond carrying oxygen to the brain in red blood cells. Iron is gifted with the ability to exist in two different charged states, so it can give and receive electrons easily. This special talent makes it indispensable to the electron transport chain and many other pathways, including those used to construct DNA, myelin, and the neurotransmitters serotonin, dopamine, and norepinephrine.²⁷ Iron deficiency is the most common nutrient deficiency in the world, affecting more than 25 percent of the world's population, most of whom are pregnant women and very young children. Since iron is needed to build DNA and myelin, iron deficiency during pregnancy can have irreversible effects on a child's intelligence, memory, and attention, and can increase risk for autism and schizophrenia.²⁸ Best dietary sources are red meat, liver, mussels, and oysters.

Magnesium's compact size and strong positive charge give it magnetic properties useful in hundreds of chemical reactions, helping to generate energy, build proteins, and stabilize genes. Magnesium exists in balance with calcium and zinc, which keeps their destructive influences in check. One of magnesium's most intriguing tasks is to sit stubbornly inside glutamate receptors (NMDA receptors, to be exact), plugging them up and preventing positive ions from entering the cell. Only when a strong electrical signal comes along will magnesium pop out like a champagne cork and allow those ions to pour in so the neuron can fire. NMDA receptors are particularly important for learning, memory, and healthy circadian rhythm (sleep-wake patterns).²⁹

Manganese: The antioxidant enzyme superoxide dismutase, which shields mitochondria from free radical damage, contains manganese. The multipurpose enzyme glutamine synthetase, which is used to manufacture glutamine, glutamate, and GABA, as well as to detoxify glutamate and ammonia in the brain,³⁰ also requires manganese.

Molybdenum: Only four enzymes in the body require molybdenum. These enzymes help prevent DNA mutations and support healthy uric acid levels (which protects the brain against oxidative stress).

Phosphorus is an essential component of cell membranes, DNA and RNA, ATP molecules (the P stands for phosphate), and bone. It also participates in multiple chemical reactions and helps regulate the pH of the blood.

Potassium is the dominant positively charged ion inside neurons, with concentrations maintained at roughly thirty times higher inside than outside to help maintain neurons' readiness to fire.³¹ The enzyme that releases energy from ATP also requires potassium.

Selenium: Several antioxidant enzymes contain selenium, including glutathione peroxidase, which helps protect the brain against stress, including oxidative stress.³²

Sodium is the dominant positively charged ion outside neurons, with concentrations maintained at roughly ten times higher outside than inside to help maintain neurons' readiness to fire.³³

Sulfur is an essential component of insulin and glutathione (one of the most important antioxidants in the brain). It is also required to build two amino acids (cysteine and methionine) and helps guide electrons through the electron transport chain.

Zinc allows certain proteins to fold into their correct shapes and assists certain enzymes in their catalytic duties. Zinc is required for healthy immune system function and neurotransmitter activity. One of zinc's unique responsibilities is to burst out of tiny storage compartments into the synapse alongside glutamate (a stimulating neurotransmitter) to buffer its signal. Zinc also behaves as a natural dopamine reuptake inhibitor, prolonging dopamine signaling in the synapse. Zinc ripens young BDNF (brain derived growth factor) molecules to maturity so they may fertilize developing neurons, supporting the process of neuroplasticity. Zinc is also central to the process of autophagy; when mitochondria or other critical cell components are damaged beyond repair and need to be destroyed, zinc helps calcium flip the kill switch, partly by intentionally generating oxygen free radicals to attack them from within and finish them off.³⁴

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Chapter 6

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About the Author



Dr. Georgia Ede is a Harvard-trained psychiatrist specializing in nutritional and metabolic psychiatry. Her pre-medical career was spent as a research assistant at the Joslin Diabetes Center in Boston, the Institute for Diabetes Research in Munich, and other academic laboratories in the fields of biochemistry, immunology, and metabolism. Her two decades of clinical psychiatry experience include twelve years as a college mental health specialist at Smith College and Harvard University Health Services, where she was the first to offer nutritionbased therapies as an alternative to psychiatric medication. Dr. Ede writes about food and the brain for Psychology Today and for her own website, DiagnosisDiet, and has been speaking on the global stage about nutrition science, nutrition policy reform, and nutritional approaches to psychiatric conditions for more than a decade. In her Massachusetts-based private practice, she consults with patients and colleagues around the world about how to use ketogenic diets and other nutrition-based interventions to address the root causes of mental health conditions, often reducing the need for psychiatric medication. To improve patient access to metabolic psychiatry services, in 2020 she developed the first and only medically accredited Ketogenic Diets for Mental Health Clinician Training Program, in which she teaches practitioners how to safely use ketogenic therapies to treat mental health disorders. In 2022, she co-authored the first inpatient study of the ketogenic diet for serious mental illnesses and was honored to be named a recipient of the Baszucki Brain Research Fund's first annual Metabolic Mind Award.