

UltraMetabolism

SELF HELP GUIDE

Mark Hyman, M.D.

Contents

INTRODUCTION

How and Why to Use This Guide	1
---	---

SECTION 1

Optimizing the 7 Keys: Quizzes and Questionnaires	3
Interpreting the Quizzes	3
<i>UltraMetabolism</i> Key #1: Control Your Appetite	5
Notes for Key #1	6
<i>UltraMetabolism</i> Key #2: Subdue Stress	10
Notes for Key #2	11
<i>UltraMetabolism</i> Key #3: Cool the Fire of Inflammation	12
Notes for Key #3	13
<i>UltraMetabolism</i> Key #4: Prevent Rust or Oxidative Stress	14
Notes for Key #4	15
<i>UltraMetabolism</i> Key #5: Turn Calories into Energy	16
Notes for Key #5	17
<i>UltraMetabolism</i> Key #6: Fortify Your Thyroid	18
Notes for Key #6	20
<i>UltraMetabolism</i> Key #7: Love Your Liver	21
Notes for Key #7	23

SECTION 2

Calculating Your Resting Metabolic Rate	24
How Do I Know If I Am a “Normal” Size?	25
More Important Information that the BMI and Waist to Hip Ratio Give You	29
What If You <i>Do</i> Get Out of Bed in the Morning?	30

SECTION 3

Using Supplements: Definitions, Dosages, and Resources	32
How to Use Supplements in the <i>UltraMetabolism</i> Prescription.	33
Definitions and Dosages of Herbs and Supplements	42
Purchasing Supplements	50

SECTION 4

Tests: Where to Get Them, How to Interpret Them.	52
Testing Laboratories	52
Basic Suggestions for Testing	53
Advanced Testing Recommendations.	55
Controlling Your Appetite: Testing for Insulin Resistance and Related Dysfunctions	55

SECTION 5

Shopping Lists for the <i>UltraMetabolism</i> Menus	60
Phase I Shopping List	61
Phase II Shopping List	64

SECTION 6

What Are Organic Foods, Whole Foods, and Whole Grains?	66
What Is a Whole Food?	66
What Is Organic?	68
What Is a Grain?	68

SECTION 7

Further Unraveling the Mystery of Carbohydrates	70
Terminology Related to Carbohydrates	71

SECTION 8

Learn How to Read Food Labels	73
Reading Food Labels: If You Really Have to Buy Something Processed	73
Understand the Nutrition Label: Think Low GL and High PI	74

SECTION 9

Your Food Journal 77

SECTION 10

Grains and Beans Cooking Chart 83

Beans Cooking Chart. 83

Grain Cooking Chart 85

SECTION 11

A Glossary of Useful Terms in the *UltraMetabolism* World 87

SECTION 12

Additional *UltraMetabolism* Resources Listed by Topic 94

INTRODUCTION

How and Why to Use This Guide

Frustrated that I couldn't share my discoveries about an entirely new way of thinking about disease, obesity, and practicing medicine with more than a few patients a day, I wrote *UltraMetabolism* to create a book that would closely simulate the experience you would have being one of my own patients. I distilled my years of knowledge and experience as a doctor into specific tools that you can use to take advantage of the science of nutrigenomics to optimize your metabolism, lose weight, get healthy, feel energized, and ultimately change your life.

Part of the problem I encountered in doing this is that new information about health and weight is always coming to light. In my private practice, I utilize this information to refine the methods I use to help people lose weight and get healthy. That means the resources I use to help my patients are constantly evolving, and I wanted to figure out a way to share that information with you.

Second, I wanted to make this program as easy as possible to use so that *anyone* could do it. Therefore, I wanted to give you the right tools to make it as easy as possible to lose weight and get healthy. After all, it's one thing to have shopping lists printed in a book that you either have to copy or carry around, and another thing entirely to have something you can simply print out, grab off the counter, and stick in your purse or wallet on the way to the grocery store.

This guide is the solution I came up with to solve those problems. I developed it as a PDF document so that I could easily update information as needed and so you would have the flexibility you need to print out and use the various parts of it to help you follow the path to optimal metabolism and health.

It's designed not only to make the *UltraMetabolism* Prescription as easy as possible to use, but to help you personalize and optimize the program even further. After all, your body

is different from every other body out there. You need to have the key to unlock your own *UltraMetabolism*.

To help with that, the guide includes:

- All the quizzes and questionnaires in the book so you can easily fill them out to see how you are doing in each of the 7 keys (this way you can even take them multiple times over the course of the program if you wish)
- Tools to calculate your resting metabolic rate (RMR) (so you know whether or not you are suffering from the starvation syndrome), your body mass index or BMI, and your waist to hip ratio (a key factor in assessing your risk of metabolic syndrome)
- Lists of terms that you need to know, including *organic*, *grass-fed*, *free-range*, *low glycemic load*, and *high glycemic load*, as well as a guide to clarify all the terms the book introduces about carbohydrates, etc. (Print out these lists and take them with you to the grocery store so you won't forget important information when you are buying your food.)
- Lists of the supplements you may wish to take to help optimize each of the 7 keys (including brands, dosages, and where to find them)
- Information on testing (where you can get tests and how to interpret them)
- All the shopping lists in the book so you can easily print them out and take them with you to the store (which makes planning your meals a cinch)
- A list of resources that will be constantly updated so you have access to the best information I have
- And a great deal more...

As you know, the *UltraMetabolism* Prescription is more than a simple diet (though it can be used that way if you wish). It's a lifestyle. It's a way of thinking about food and changing your diet so that you are in better harmony with your genes.

Of course, the outcome is that you end up fitting into your jeans better too.

So whether you are trying to lose those extra five pounds of flab around your belly so you can fit into your bikini next summer or you have serious weight-related health issues you are struggling to overcome, this guide will help you make the most of the program.

While losing weight is an attractive idea to most of us, getting in tune with your genes is about more than that. It's about being healthy, feeling more energetic, and giving yourself the opportunity to live the life you most want to live.

I encourage you to use the tools in this guide to make it as easy as possible for that dream to come true.

SECTION 1

Optimizing the 7 Keys: Quizzes and Questionnaires

Understanding where your weaknesses are in each of the 7 keys is one of the most critical elements in the *UltraMetabolism* program. Once you know this you can use the steps in the book to design a health program specific to your needs so you can optimize your metabolism and lose weight fast.

I know some people don't care to write in their books. And I know still others will want to take these quizzes several times over the course of the program. For that reason I have reprinted the quizzes and the interpretation guide here (as I promised I would in the book) for your convenience.

What's more, I have added a special space where you can take notes about each of the keys. If in reading the book you find specific information that you feel will help you create the eating and exercises lifestyle described in the book, I encourage you to take notes on it here. That way you can easily refer to it as you proceed on the *UltraMetabolism* program.

INTERPRETING THE QUIZZES

During each visit with a patient, I review an extensive list of questions that helps me identify key areas of imbalance or metabolic problems. I have created self-scoring questionnaires that will help you identify where *you* have a problem. This is critical to helping you customize *UltraMetabolism* and personalize your dietary, lifestyle, supplement, and testing

recommendations. Please refer to this general interpretation guide. It applies to the questionnaires in each of the keys of *UltraMetabolism*.

Here is how to interpret your score and what to do about it.

Low: 0 to 3

- Do the basic *UltraMetabolism* Prescription.

Moderate: 4 to 6

- Follow the steps in each chapter to overcome the metabolic problems associated with that key and optimize the *UltraMetabolism* Prescription for your needs.

High: 7 and above

- Do the *UltraMetabolism* Prescription; customize it using the specific recommendations in the chapter. As a high scorer, you would benefit from taking the additional tests noted in the last step. In addition to further testing, I strongly recommend that you seek professional medical assistance. To find a practitioner familiar with the principles in *UltraMetabolism*, go to www.ultrametabolism.com.

UltraMetabolism Key #1: Control Your Appetite

HOW GOOD IS YOUR GUT-BRAIN-FAT CELL COMMUNICATION?

Score one point each time you answer yes to the following questions by putting a checkmark in the box on the right.

Have I gained weight around my belly?	
Do I crave sugar or carbohydrates?	
Do I feel tired after eating a meal?	
Do I eat fewer than five servings of fruits and vegetables a day?	
Do I eat fewer than 30 grams of fiber a day (the average American diet has about 8 grams) from beans, nuts, seeds, vegetables, and fruit?	
Do I skip breakfast?	
Do I eat within three hours of going to bed?	
Do I sleep less than eight hours a night?	
Do I mostly eat carbohydrates alone, rather than combining them with fat and protein at every meal?	
Do I eat high-fructose corn syrup (found in almost all processed foods and drinks)?	
Do I eat less than three times a day?	
Do I feel stressed on a regular basis?	

METABOLIC SYNDROME SELF-ASSESSMENT TEST

Score one point each time you answer yes to the following questions by placing a checkmark in the box on the right.

Do you have a waist to hip ratio greater than 0.8 if you are a woman or greater than 0.9 if you are a man? (To figure out your waist to hip ratio, measure the circumference of your waist around your belly in inches. Take this measurement and divide it by the circumference of your hips at their widest point.)	
Do you crave sweets, eat them, get a temporary boost of energy and mood, and later crash?	
Do you have a family history of diabetes, hypoglycemia, or alcoholism?	
Do you get irritable, anxious, tired, jittery, or develop headaches intermittently throughout the day but temporarily feel better after meals?	
Do you feel shaky two to three hours after a meal?	
Do you eat a low-fat diet, but can't seem to lose weight?	
If you miss a meal, do you feel cranky, irritable, weak, or tired?	
If you eat a carbohydrate breakfast (muffin, bagel, cereal, pancakes, etc.), do you feel as though you can't seem to control your eating for the rest of the day?	
Once you start eating sweets or carbohydrates, do you feel as though can't stop?	
If you eat fish or meat and vegetables, do you feel good, but seem to get sleepy or feel "drugged" after eating a meal full of pasta, bread, potatoes, and dessert?	
Do you go for the bread basket at the restaurant?	
Do you get heart palpitations after eating sweets?	
Do you seem salt sensitive (do you tend to retain water)?	
Do you get panic attacks in the afternoon if you skip breakfast?	
Do you often get moody, impatient, or anxious?	
Are your memory and concentration poor?	
Does eating make you calm?	
Do you get tired a few hours after eating?	

Do you get night sweats?	
Do you frequently get thirsty?	
Do you seem to get frequent infections? (For example, do you have regular colds or poorly healing wounds?)	
Are you tired most of the time?	
Have you been diagnosed with polycystic ovarian syndrome, infertility, high blood pressure, heart disease, or adult-onset diabetes?	
Do you have chronic fungal infections (jock itch; vaginal yeast infections; dry, scaly patches of skin)?	

Optional

I recommend specific testing to diagnose metabolic syndrome. You can ask your doctor for the appropriate tests. Refer to www.ultrametabolism.com for recommendations on doctors who can help you.

If you have taken the tests and have abnormal lab results, give yourself another point for each of the following by checking the box on the right.

A low HDL levels (<50 mg/dl [milligrams per deciliter] for men, <60 for women)	
High triglycerides (>100 mg/dl)	
A triglyceride/HDL ratio of greater than 4:1	
Abnormal liver function tests (AST, ALT, GGT) or fatty liver	
A high serum ferritin level (>200 ng/ml [nanograms per milliliter])	
A high serum uric acid level (>7.0 mg/dl)	
A low serum magnesium level (<2.0 mg/dl)	
A fasting blood sugar level >90 mg/dl	
A fasting insulin level >8 mIU/ml (micro International Units per milliliter)	
A 1 or 2 hour post-75-gram-load sugar level of >120 mg/dl, or insulin >30 mIU/ml	

Interpretation

There is a slightly different interpretation key for this particular test. Use this key see whether or not you have metabolic syndrome and how severe your condition is.

1 to 5: Doing well

- Do the basic *UltraMetabolism* Prescription

5 to 10: Moderate metabolic syndrome

- Overcome the metabolic syndrome by optimizing the basic *UltraMetabolism* Prescription with the protocol in chapter nine of *UltraMetabolism*

11 and up: Severe metabolic syndrome

- Have additional testing done and seek professional help. You can learn about all the tests for metabolic syndrome at www.ultrametabolism.com/tests and get more information about how to obtain tests and where to seek professional assistance. There is also information in section 4 of this guide.

UltraMetabolism Key #2: Subdue Stress

HOW IS THE STRESS RESPONSE AFFECTING YOU?

Score 1 point each time you answer yes to the questions below by putting a checkmark in the box on the right.

Do you have low blood pressure?	
Do you get dizzy when you stand up?	
Have you been diagnosed with hypoglycemia?	
Do you have cravings for salt or sweets?	
Do you have dark circles under your eyes?	
Do you have trouble falling asleep and/or staying asleep?	
Do you feel groggy and not refreshed when you wake up?	
Do you experience mental foginess or trouble concentrating?	
Do you get headaches?	
Do you get frequent infections (for example, colds)?	
Do you tire easily on doing any exercise or feel very fatigued after exercise?	
Do you often feel stressed?	
Are you simultaneously tired and wired?	
Do you have water retention?	
Do you have panic attacks or startle easily?	
Do you experience heart palpitations?	
Do you need to start the day with caffeine?	
Do you have poor tolerance for alcohol, caffeine, and other drugs?	
Do you often feel weak and/or shaky?	

Do you get sweaty palms and feet when you're nervous?	
Do you often experience fatigue?	
Do you often experience weak muscles?	

NOTES FOR KEY #2

UltraMetabolism Key #3: Cool the Fire of Inflammation

HOW INFLAMED ARE YOU?

Score one point each time you answer yes to the questions below by putting a checkmark in the box on the right.

Do you have seasonal or environmental allergies?	
Do you have food allergies or do you feel poorly after eating (sluggishness, headaches congestion, confusion)?	
Do you work in an environment with poor lighting, chemicals, and/or poor ventilation?	
Are you exposed to pesticides, toxic chemicals, loud noise, heavy metals, and/or toxic bosses and coworkers?	
Do you get frequent colds and infections?	
Do you have a history of chronic infections such as hepatitis, skin infections, canker sores, and cold sores?	
Do you have sinusitis and allergies?	
Do you have bronchitis or asthma?	
Do you have dermatitis (eczema, acne, rashes)?	
Do you suffer from arthritis (osteoarthritis/degenerative wear and tear)?	
Do you have an autoimmune disease (rheumatoid arthritis, lupus)?	
Do you have colitis or inflammatory bowel disease?	
Do you have irritable bowel syndrome (spastic colon)?	
Do you have problems such as ADHD, autism, or mood or behavior problems (actually part of a family of problems called neuritis)?	
Do you have heart disease or have you had a heart attack?	
Do you have diabetes or are you overweight (BMI greater than 25)?	
Do you have Parkinson's or have a family history of Parkinson's or Alzheimer's disease?	

UltraMetabolism Key #4: Prevent Rust or Oxidative Stress

ARE YOU RUSTING?

Score one point each time you answer yes to the questions below by placing a checkmark in the box on the right.

Are you fatigued on a regular basis?	
Do you find yourself sensitive to perfume, smoke, or other chemicals or fumes?	
Do you regularly experience deep muscle or joint pain?	
Are you exposed to a significant level of environmental pollutants or chemicals at home or at work?	
Do you use tobacco products? Are you exposed to secondhand smoke?	
Do you drink more than three alcoholic beverages a week?	
Are you exposed to sunlight or ultraviolet light (tanning booths) more than one hour a week?	
Do you exercise less than one-half hour three times a week?	
Do you take prescription, over-the-counter, and/or recreational drugs?	
Would you describe your daily stress level as high?	
Do you eat fried foods, margarine, or high-fat foods?	
Do you eat less than five to nine servings (one-half cup) of deeply colored vegetables and fruits a day?	
Do you tend to overeat often?	

UltraMetabolism Key #5: Turn Calories into Energy

HOW POWERFUL IS YOUR METABOLIC ENGINE?

Score one point each time you answer yes to the following questions by putting a checkmark in the box on the right.

Do you experience chronic or prolonged fatigue?	
Do you have muscle-aching pain or discomfort?	
Do you have trouble falling asleep and/or staying asleep, or do you wake up early?	
Do you experience muscle weakness?	
Do you wake up tired despite a normal amount of sleep?	
Do you have poor exercise tolerance with severe fatigue afterward?	
Do you have trouble concentrating or memory problems?	
Are you often irritable and/or moody?	
Does fatigue prevent you from doing things you would like to do?	
Does fatigue interfere with your work, family, or social life?	
Have you been under prolonged stress?	
Did your symptoms of fatigue start after a severe stress of some sort, infection or trauma?	
Have you been diagnosed with chronic fatigue syndrome or fibromyalgia?	
Do you have a history of chronic infections?	
Do you frequently overeat?	
Are you frequently exposed to environmental chemicals (pesticides, unfiltered water, food that is not organic, tuna, swordfish, or dental amalgams)?	
Have you been diagnosed with Gulf War Syndrome?	
Have you been diagnosed with a neurological disease such as Alzheimer's, Parkinson's, or ALS?	

UltraMetabolism Key #6: Fortify Your Thyroid

ARE THYROID PROBLEMS CONTRIBUTING TO YOUR WEIGHT STRUGGLE?

Score one point each time you answer yes to the following questions by putting a checkmark in the box on the right.

Are your skin and fingernails thick?	
Do you have dry skin?	
Do you have a hoarse voice?	
Do you have thinning hair, hair loss, or coarse hair?	
Are you cold when everyone else is warm?	
Do you have colds hands and feet?	
Is your basal body temperature is less than 97.8 first thing in the morning (underarm basal body thermometers are available at most drug stores)?	
Do you have muscle fatigue, pain, or weakness?	
Do you have heavy menstrual bleeding, worsening of premenstrual syndrome, other menstrual problems, and/or infertility?	
Have you experienced a loss of sex drive (decreased libido)?	
Do you have severe menopausal symptoms (such as hot flashes and mood swings)?	
Have you experienced fluid retention (swelling of hands and feet)?	
Do you experience fatigue?	
Do you have low blood pressure and heart rate?	
Do you have elevated cholesterol?	
Do you have trouble with memory and concentration or "brain fog"?	
Do you wake up tired and have trouble getting out of bed in the morning?	

Do you have a loss of or thinning of the outer third of your eyebrows?	
Do you have trouble losing weight, or have you experienced recent weight gain?	
Do you experience depression and apathy or anxiety?	
Do you experience constipation?	
Have you been diagnosed with autoimmune disease (e.g., celiac disease, rheumatoid arthritis, multiple sclerosis, lupus) allergies, or yeast overgrowth (all of which can affect thyroid function)?	
Are you or have you been exposed to radiation treatments?	
Are you or have you been exposed to environmental toxins?	
Do you have a family history of thyroid problems?	
Do you drink chlorinated or fluoridated water?	

UltraMetabolism Key #7: Love Your Liver

HOW WELL IS YOUR DETOXIFICATION SYSTEM WORKING?

Score one point each time you answer yes to the questions below by putting a checkmark in the box on the right.

Are you constipated and go to the bathroom only every other day or less often?	
Do you urinate small amounts of dark, strong-smelling urine only a few times a day?	
Do you rarely break into a real sweat?	
Do you have one or more of the following symptoms: fatigue, muscle aches, headaches, or concentration or memory problems?	
Do you have fibromyalgia or chronic fatigue syndrome?	
Do you drink tap or well water?	
Do you have your clothes dry cleaned?	
Do you work or live in a "tight" building with poor ventilation or windows that don't open?	
Do you live in a large urban or industrial area?	
Do you use household or lawn and garden chemicals, or have your house or apartment treated for bugs by an exterminator?	
Do you have more than one or two mercury amalgams ("silver" fillings)?	
Do you eat large fish (swordfish, tuna, shark, tilefish) more than once a week?	
Are you bothered by one or more of the following: gasoline or diesel fumes, perfumes, new-car smells, fabric stores, dry cleaning, hairspray or other strong odors, soaps, detergents, tobacco smoke, or chlorinated water?	
Do you have a negative reaction when you consume foods containing garlic or onions, MSG, sulfites (found in wine, salad bars, dried fruit), sodium benzoate (a preservative), red wine, cheese, bananas, chocolate, or even a small amount of alcohol?	

<p>When you drink coffee or other substances containing caffeine, do you feel wired, have increased aches in muscles and joints, or have hypoglycemic symptoms (anxiety, palpitations, sweating, and dizziness)?</p>	
<p>Do you regularly consume any of the following substances or medications: acetaminophen (Tylenol); acid-blocking drugs (Tagamet, Zantac, Pepcid, Prilosec, Prevacid); hormone-modulating medications in pills, patches, or creams (a birth control pill, estrogen, progesterone, prostate medication); ibuprofen or naproxen; medications for colitis or Crohn's disease; medications for recurrent headaches; allergy symptoms; or nausea, diarrhea, or indigestion?</p>	
<p>Have you had jaundice (turning yellow) or have you been told you have Gilbert's syndrome (an elevation of a liver test for bilirubin)?</p>	
<p>Do you have a history of any of the following conditions: breast cancer, smoking-induced lung cancer or other type of cancer, prostate problems, food allergies, sensitivities, or intolerances?</p>	
<p>Do you have a family history of Parkinson's disease, Alzheimer's disease, amyotrophic lateral sclerosis (ALS), other motor neuron diseases, or multiple sclerosis?</p>	

SECTION 2

Calculating Your Resting Metabolic Rate

By now you know what the starvation syndrome is and what the World Health Organization specifies as a starvation diet. You also know that you are genetically wired to get fat. Great. But you may be asking yourself, “How many calories do I need to eat to keep myself out of the starvation syndrome?” The answer to this question is something I addressed in the book, but I want to look at in greater detail here: your *resting metabolic rate*.

You will remember that your resting metabolic rate is the total number of calories your body needs to survive if it is at complete rest, that is, if you are asleep or in a coma. The reason this number is important is simple: If you eat fewer calories than is dictated by your RMR, your body thinks you’re starving. It makes no difference at all to your DNA that you have a refrigerator within reach, a McDonald’s on the corner, and a grocery store stocked with food and open 24 hours a day, seven days a week. When you don’t eat enough, your body goes into starvation mode and that means you are going to eat. Your genes were designed to be fabulous at dealing with a lack of food, not an endless abundance of it.

Calculating your RMR is also a fairly simple matter. If you are average size, take your weight in pounds and multiply that number by ten. If you are very muscular and lean, multiply your weight by 13. If you are very overweight, then multiply it by eight. For example, if I am 180 pounds and 6’3”, I am a fairly normal weight for my height. That means I need 1,800 (180 times 10) calories a day for my body to function normally at complete rest. If I eat less than that, my body goes into starvation mode.

There are more sophisticated methods and calculations to obtain more accurate readings, but this gets close enough for most people. You can use the online calculator on www.utrametabolism.com to calculate your RMR.

HOW DO I KNOW IF I AM A “NORMAL” SIZE?

But how can you tell if you are “normal” or “overweight”? There are a number of measures that people use to get a sense for whether or not they are “fat,” and none of them tells the complete story. That is why we need to combine them to get a complete picture of whether or not you are a “normal” weight. This three-step process will help you do just that.

Step 1: The BMI

The Body Mass Index (BMI) is a scale that compares weight against height. It is a way of accounting for height and weight so that people of different heights can be compared.

Look at the BMI chart below. The column on the left describes your height in feet and inches. Find your height and then track across the chart to your right to find your weight. If you don't find your exact weight, that's okay. For the purposes of this calculation you don't have to have an exact figure for this part of the process.

Once you have found your approximate weight, look at where it falls in the list of numbers across the top of the chart. If you score less than 25 you are considered average, but if you score 25 to 29 you are considered overweight, and a score above 30 suggests that you are obese.

BMI (kg/M2)	19	20	21	22	23	24	25	26	27	28	29	30	35	40
Height (in.)	Weight (lb.)													
4'10"	91	96	100	105	110	115	119	124	129	134	138	143	167	191
4'11"	94	99	104	109	114	119	124	128	133	138	143	148	173	198
5'0"	97	102	107	112	118	123	128	133	138	143	148	153	179	204
5'1"	100	106	111	116	122	127	132	137	143	148	153	158	185	211
5'2"	104	109	115	120	126	131	136	142	147	153	158	164	191	218
5'3"	107	113	118	124	130	135	141	146	152	158	163	169	197	225
5'4"	110	116	122	128	134	140	145	151	157	163	169	174	204	232
5'5"	114	120	126	132	138	144	150	156	162	168	174	180	210	240
5'6"	118	124	130	136	142	148	155	161	167	173	179	186	216	247
5'7"	121	127	134	140	146	153	159	166	172	178	185	191	223	255
5'8"	125	131	138	144	151	158	164	171	177	184	190	197	230	262
5'9"	128	135	142	149	155	162	169	176	182	189	196	203	236	270
5'10"	132	139	146	153	160	167	174	181	188	195	202	207	243	278
5'11"	136	143	150	157	165	172	179	186	193	200	208	215	250	286
6'0"	140	147	154	162	169	177	184	191	199	206	213	221	258	294
6'1"	144	151	159	166	174	182	189	197	204	212	219	227	265	302
6'2"	148	155	163	171	179	186	194	202	210	218	225	233	272	311
6'3"	152	160	168	176	184	192	200	208	216	224	232	240	279	319
6'4"	156	164	172	180	189	197	205	213	221	230	238	246	287	328

Again, let's take the stats from above as an example. I am 6'3" and 180 pounds, so you can see that I fall in between a 22 and a 23 on the chart. That means I am considered average based on the BMI.

Step 2: Waist to Hip Ratio

The problem with the BMI is that it doesn't tell the whole story; it doesn't take into account where the weight is *distributed*. If more is around your waist than your hips, then you are more at risk of disease and are more "obese."

There are people out there that simply don't fit the "typical" body type. Take Shaquille O'Neil for example. This guy is a professional basketball player at the height of his profession and he scores a 30 on the BMI. By BMI standards that would put him in the "obese" category. But would you call Shaq obese?

People with large amounts of muscle—like professional athletes—may have a high BMI but not be over fat. That's because their weight is distributed in a way that makes sense for their bodies.

This difference in how weight is distributed is called *body composition*, and there are a few ways you can figure out what yours is. The most accurate way to assess this information is by using special tools, which I describe in step four below.

If you don't have access to these tools, or you can't find a doctor that has them, you can use your *waist to hip ratio* to get an idea of your body composition. Your waist to hip ratio is exactly what it says it is: It is the relative size of your belly to your hips, and it gives a general picture of the location of your body fat.

To figure out your waist to hip ratio, measure the circumference of your waist around your belly button in inches. Take this measurement and divide it by the circumference of your hips at their widest point. A normal waist-hip ratio for men is less than 0.9. A normal waist to hip ratio for women is less than 0.8.

Let's carry on with the example above. I'm 6'3" and 180 pounds. The circumference of my belly equals 34, and the circumference of my hips equals 44. I take the first measurement and divide it by the second measurement, resulting in a waist to hip ratio of .77, which is in the normal range.

Step 3: Using Both Measurements

Now you simply combine the information you got from the first two steps to get an idea of whether or not you are a normal size. If you scored over 29 on the BMI and your waist to hip ratio is greater than 0.8 or 0.9, then you are obese. If you score 25 to 29 on the BMI and

you are over a 0.8 or 0.9, you are overweight. If you score under 25 on the BMI and you are less than 0.8 or 0.9, you are a normal size.

The two most important exceptions to this are the following: 1) The Shaq scenario: You have a BMI that suggests you are obese, but your waist to hip ratio is less than 0.9 for a man and less than 0.8 for a woman. In this case you are not obese and may be very fit and healthy. 2) The Skinny Fat Exception: You have a BMI of less than 25 but have a waist to hip ratio of over 0.9 as a man or 0.8 as a woman. This means that you are really carrying too much body fat, and that your fat is in the wrong place—around your belly.

Step 4: Check Your Body Composition or Body Fat Analysis

Though you need special devices to do this, acquiring a clinical measurement of your body composition and having a fat analysis are the most accurate of all methods to assess obesity or weight issues, especially if combined with waist to hip ratios and BMI.

There are three main techniques to get this number. **Calipers** are used in most fitness centers but represent the least accurate method. **Impedance testing** can now be done with special scales that are widely available and is the second-best method. These scales measure total body fat percentage, but don't identify if the fat is more in your legs or your stomach, which has different implications for your health and weight loss.

The best method available in hospitals and special clinics is a **DEXA body composition**. It uses the same technology that measures bone density, and gives the most accurate representation of your body fat because it measures all compartments separately—legs, arms, and belly. If your legs and arms are thin but your belly is fat, you are still in trouble. In all compartments, the ideal body composition for men is 10 to 20 percent of their total body weight as fat. For women it is 20 to 30 percent.

To summarize:

1. Check your BMI.
2. Check your waist to hip ratio.
3. Compare the two measurements.
4. Check your body composition or body fat analysis if available (fitness centers, special scales—not that expensive).

Once you know whether or not you are a “normal” size, figuring out your RMR is a simple matter. Simply choose the correct multiplier and do the math (or use the chart below for quick reference).

Important Measurements and Definitions in Obesity

RMR (Resting Metabolic Rate): A measure of the calories burned at rest

To calculate:

For the average person $RMR = 10 \times \text{weight in lb}$

For a muscular person $RMR = 13 \times \text{weight in lb}$

For an overweight person $RMR = 8 \times \text{weight in lb}$

BMI (Body Mass Index): A measure of weight that takes height into account

$BMI = \text{weight in kg} / \text{height in meters squared}$

Normal is <25

Overweight is 25 to 39

Obese is >30

Waist to Hip Ratio: A measure of the relative amount of abdominal fat

This is determined by finding the circumference of your waist at the belly button and dividing it by the circumference of your hips at the widest point of your buttocks. This is a better measure of the risk of heart disease than BMI.

Normal waist to hip ratio for men is <0.9

Normal waist to hip ratio for women is <0.8

Body Composition or Body Fat Analysis: A measure of the actual amount or percentage of fat in your body

Measured by calipers, impedance, or DEXA body composition analysis

Ideal for women is 20 to 30 percent of total body weight as fat

Ideal for men is 10 to 20 percent of total body weight as fat

MORE IMPORTANT INFORMATION THAT THE BMI AND WAIST TO HIP RATIO GIVE YOU

If you find that you do have weight problems, keep in mind that the consequences of this are greater than whether or not you can fit into your favorite pair of jeans. You run significant health risks being overweight. The following chart gives you your health risk based on BMI and waist to hip ratio.

Risk of Associated Disease According to BMI and Waist Size	Typical Definition (may not be accurate unless combined with W:H ratio)		
BMI		W:H ratio <0.8 for woman and <0.9 for men	W:H ratio > 0.8 for women and >0.9 for men
18.5 or less	Underweight	N/A	N/A
18.5–24.9	Normal	N/A	Moderate
25.0–29.9	Overweight	Increased	High
30.0–34.9	Obese	High	Very High
35.0–39.9	Obese	Very High	Very High
40 or greater	Extremely Obese	Extremely High	Extremely High

WHAT IF YOU *DO* GET OUT OF BED IN THE MORNING?

Needless to say, the RMR by itself is not an accurate representation of the number of calories you need to consume to live your life, unless you don't plan on getting out of bed from now on. Not only do you need the number of calories amounting to 10 times your weight in pounds (if you are normal size) just to run your basic survival metabolic functions, if you simply climb out of bed in the morning and go to work, you'll need another 15 to 30 percent of those calories in addition to your RMR. If you exercise, then you will need to eat the equivalent number of calories that you burn to maintain your weight (less if you want to lose it).

For instance, let's say you weigh 150 pounds. That means to maintain your RMR you need to consume 1,500 calories per day. If you get out of bed, you'll need another 225 to 450 calories, and if you work out, add another 200 to 400 calories depending on how strenuous your exercise regimen is. That means you need 2,150 to 2,350 calories a day to maintain your weight.

But here's the key: If you want to lose weight, you have to eat **LESS** than you are burning, but you must eat **MORE** than your RMR. Therein lies the rub. Most diets ask you to restrict calories *below* your resting metabolic rate. Doing so will actually make you gain weight rather than lose it.

Let's say that you are 5'5" and 138 pounds. Your resting metabolic rate is 1,380 calories. Now let's say for the sake of argument that you manage to get out of bed every day. That means you will be burning an additional 400 calories per day. Let's assume that you also do a moderate exercise program. This adds up to 200 more calories needed every day to meet your body's needs.

In this example your body is burning 1,980 calories a day. If you want to lose weight you need to eat less than 1,980 calories a day, but more than 1,380 calories a day. Remember, if you drop below this lower threshold (your RMR) you will set off a chain of chemical responses in your body that will make you gain weight.

As I explained in the book, your metabolism, when running at an optimum level, will generally take care of this naturally. If you are following the guidelines for eating described in *UltraMetabolism*, you shouldn't have any problem staying above your RMR.

However, knowing what your RMR is can be helpful, especially if you have been trained to think of diets in terms of counting calories. Though counting calories is a practice I basically encourage you to wean yourself from, knowing your RMR offers some important information. It can help you stay out of the starvation syndrome, or eating too LITTLE, which is counterproductive to weight loss.

SECTION 3

Using Supplements: Definitions, Dosages, and Resources

Taking the right supplements can help you fine-tune your metabolism and overcome many of the problems you have in the 7 keys. For that reason, having the right information on which supplements you should take is a critical tool for optimizing your health and accelerating your weight loss program.

Unfortunately, the world of supplements can simply be overwhelming. The lack of adequate government regulations, the dizzying number of products on the market, and the large variations in quality all create a minefield of obstacles for anyone trying to find the right vitamin or herb.

However, in *UltraMetabolism* I shared with you the knowledge of supplements I have developed over time. This should help you weed your way through the confusing world of supplements.

To make that chore easier, I wanted to provide you with some quick reference tools in this guide.

We will start with a basic overview of the supplements used in the *UltraMetabolism* Prescription and some rules about taking supplements. Then I will give you an easy-to-use chart that will help you quickly identify which supplements you should take based on the research you did on your body in each of the keys. Finally, I will give you a list of manufacturers that I have found produce high-quality supplements.

HOW TO USE SUPPLEMENTS IN THE *ULTRAMETABOLISM* PRESCRIPTION

In *UltraMetabolism* I suggest you use two separate categories of supplements:

- Basic nutritional supplementation that I recommend to everyone
- Specific additional supplements based on your problem areas in each of the 7 keys

While this part of the program isn't critical, I strongly advise that you consider using supplements as recommended in the book. As I said before, I have seen many patients who have benefited from the use of supplements that optimize the metabolism.

Let's look at these two categories one by one.

Basic Nutritional Support

Ninety-two percent of Americans are deficient in one or more essential vitamins and minerals, and more than 99 percent of Americans are deficient in the essential omega-3 fatty acids. Therefore, I recommend that *all* people take a basic multivitamin and multimineral, calcium, magnesium with D, and omega-3 fats as the foundation for good health as well as a healthy metabolism. Ample scientific evidence supports this recommendation, including guidelines published in the *New England Journal of Medicine* and the *Journal of the American Medical Association*.

Before starting the supplements listed in part two of *UltraMetabolism* that relate to specific conditions, I recommend that everyone follow these recommendations for basic nutritional support. Nearly all people need three basic supplements to create and maintain good health and optimal metabolism. The food we eat today simply does not give us all of what we need in terms of vitamins and minerals. So many parts of your metabolism depend on vitamins, minerals, and essential fats that you cannot have an optimal metabolism without them.

If you are interested in supplements and want to get started on a supplement regimen now, consider the following:

1. A multivitamin and multimineral combination
2. A balanced, absorbable calcium, magnesium, and vitamin D supplement
3. An omega-3 fatty acid supplement

MULTIVITAMIN AND MINERAL

A good multivitamin and multimineral generally contains the following:

- Mixed carotenes (alpha, beta, cryptoxanthin, zeaxanthin, and lutein), 15,000-25,000 units
- Vitamin A (preformed retinol), 1000-2000 international units
- Vitamin D3, 400-800 international units
- Vitamin E (mixed tocopherols, including d-alpha, gamma, and delta), 400 international units
- Vitamin C (as mixed mineral ascorbates), 500-1000 milligrams
- Vitamin K1, 30 micrograms
- B1 (thiamine), 25-50 milligrams
- B2 (riboflavin), 25-50 milligrams
- B3 (niacin), 50-100 milligrams
- B6 (pyridoxine), 25-50 milligrams
- Folic acid (ideally as mixed with folic acid 5-methyltetrahydrofolate), 800 micrograms
- B12, 100-500 micrograms
- Biotin, 150-000 micrograms
- Pantothenic acid, 100-500 milligrams
- Iodine, 25-75 micrograms
- Zinc (as amino acid chelate), 10-30 milligrams
- Selenium, 100-200 micrograms
- Copper, 1 milligram
- Manganese, 5 milligrams
- Chromium (ideally as chromium polynicotinate), 100-200 micrograms
- Molybdenum, 25-75 micrograms
- Potassium, 50-100 milligrams
- Boron, 1 milligram

- Vanadium, 50 micrograms
- Inositol, 25-50 milligram
- Choline, 100-200 milligrams

Keep in mind that this usually requires the intake of two to six capsules or tablets a day to obtain adequate amounts. Some people may have unique needs for much higher doses that need to be prescribed by a trained nutritional or functional medicine physician. (See the glossary in section ten for a definition of “functional medicine physician.”)

BALANCED ABSORBABLE CALCIUM, MAGNESIUM, AND VITAMIN D

In addition to a multivitamin and multimineral, you will need to consider taking additional calcium, magnesium, and vitamin D. They are usually found packed together in one supplement. I recommend the following:

- Calcium citrate, 800-1200 milligrams per day
- Magnesium amino acid chelate (aspartate, glycinate, ascorbate, or citrate), 400-600 milligrams per day
- Vitamin D3, 400-800 international units a day (in addition to what is in the multivitamin, because so many people are significantly vitamin D deficient)

OMEGA-3 FATTY ACIDS

Finally, I recommend supplementing your intake of omega-3 fatty acids. They are so difficult to come by in our modern diet that supplements help almost everyone. Try the following:

- EPA/DHA (approximately 400mg/200mg ratio per capsule), one to four capsules a day (this must be from a reputable company that certifies purity from heavy metals and pesticides; safer options include Nordic Naturals, OmegaBrite, Metagenics)

Additional Supplements

Once you have started on this basic nutritional supplement program, you can then begin to integrate the various other herbal remedies and supplements that are discussed in each of

the keys. The chart below will make it easy for you to quickly identify which supplements you should take if you are having problems in a particular key area.

But before we get to that, there are a few things to keep in mind when you are taking supplements for specific problem areas:

1. **Don't double-dose.** Many supplements help in a number of different keys. Don't double-dose. Simply take the highest dosage recommended for a given supplement. Doing this will help in each of the areas connected to that supplement. For example, if I suggest 600 milligrams a day of lipoic acid to help balance your blood sugar, 600 milligrams a day to improve your mitochondrial function, and 600 milligrams a day to help your detoxification, it does *not* mean you should take 1800 milligrams a day, only a total of 600 milligrams.
2. When taking herbs, be careful to select companies that provide purified and well-processed herbs (more information on this below). Not all herbs are created equal, and some contain a significant level of contaminants.
3. Take fish oil just before meals to prevent any fish taste from coming up.
4. Generally take all your vitamins with food—optimally with a meal or just before. People who take them after a meal may find they just sit on top of their food and upset their stomach. If you have an upset stomach even when you take them before a meal, find a doctor who can help to correct any digestive problems, which are often the source of intolerance.

SUPPLEMENT CHART FOR EACH OF THE 7 KEYS TO *ULTRAMETABOLISM*

In the chart below, look across the top column for the key area you are having problems in. Then simply scroll down the chart for a list of supplements that will help you in that area. In cases where I recommend specific dosages, I have noted the dosage for the supplement. For supplements that don't have specific dosages, I have simply marked an "X" to note that it is an important supplement to consider.

For more information on dosages and definitions, refer to the list of herbs and supplements copied from Appendix B of *UltraMetabolism* below.

Herbs and Supplements	Control Your Appetite	Subdue Stress	Cool the Fire of Inflammation	Prevent Rust or Oxidative Stress	Turn Calories into Energy	Fortify Your Thyroid (See information in key)	Love Your Liver
HERBS							
Ashwagandha		150 mg once or twice daily					
Capsaicin			X				
Cinnamon	1–2 grams a day in two doses						
Cocoa			X				
Enzymes (Bromelain and other proteolytic enzymes)			600 mg a day in divided doses between meals				
Fenugreek	25–50g per day in two doses						
Green Tea	240–320 mg phenols per day		240–320 mg phenols per day	240–320 mg phenols per day			240–320 mg phenols per day

Herbs and Supplements	Control Your Appetite	Subdue Stress	Cool the Fire of Inflammation	Prevent Rust or Oxidative Stress	Turn Calories into Energy	Fortify Your Thyroid (See information in key)	Love Your Liver
Ginger			two to four 500 mg capsules per day (or use in cooking) in two doses	two to four 500 mg capsules per day (or use in cooking) in two doses			
Ginseng	200 mg (twice daily)	200 mg (twice daily)					
Licorice		450 mg twice daily					
Milk Thistle (Silymarin)				70-210 mg daily			70-210 mg daily in two doses
Rhodiola		100-150 mg twice a day					
Siberian Ginseng		200 mg two to three times a day					
Turmeric			400-1200 mg a day in two doses	400-1200 mg a day			

Herbs and Supplements	Control Your Appetite	Subdue Stress	Cool the Fire of Inflammation	Prevent Rust or Oxidative Stress	Turn Calories into Energy	Fortify Your Thyroid (See information in key)	Love Your Liver
Quercetin (Fruit and vegetable rind)			500 mg 15 minutes before meal to reduce food reactions				500mg 15 minutes before meal to reduce food reactions
SUPPLEMENTS							
Alpha lipoic acid	100-300mg twice daily			100-300 mg twice daily	100-300 mg twice daily		100-300 mg twice daily
Acetyl L-carnitine					500-2000 mg daily in two doses		
Taurine and Glycine (Amino acids)							500 mg (each) twice daily
Aspartic acid combined with magnesium (Amino acid)					200-400 mg daily		
B complex vitamins		X					

Herbs and Supplements	Control Your Appetite	Subdue Stress	Cool the Fire of Inflammation	Prevent Rust or Oxidative Stress	Turn Calories into Energy	Fortify Your Thyroid (See information in key)	Love Your Liver
Quercetin (Bioflavonoid)							500 mg 15 minutes before meal to reduce food reactions
hapycnogenol or grapeseed extract (Bioflavonoid)				50-300 mg daily			50-300 mg daily
Rutin (Bioflavonoid)							X
Extrabuffered vitamin C with mineral ascorbates		1000-4000 mg a day					1000-4000 mg a day
Coenzyme Q10				50-1200 mg daily in divided doses	50-1200 mg daily		
Creatine Powder					2-4 g daily in divided doses		
D-ribose					5 g one to two times daily with water		

Herbs and Supplements	Control Your Appetite	Subdue Stress	Cool the Fire of Inflammation	Prevent Rust or Oxidative Stress	Turn Calories into Energy	Fortify Your Thyroid (See information in key)	Love Your Liver
GLA or gamma linolenic acid	1-2 g evening primrose/ 500-1000 mg twice daily						
Magnesium		See below for dosages					
N-acetylcysteine (NAC)				500-2000 mg daily in two doses	500-2000 mg daily in two doses		500-2000 mg daily in two doses
NADH				5-20 mg daily in the morning	5-20 mg daily in the morning		
PGX (Polyglycoplex or konjac root fiber)	Two to four capsules before every meal						
Probiotics			X				X
Zinc		15-30 mg a day					

DEFINITIONS AND DOSAGES OF HERBS AND SUPPLEMENTS

What follows is repeated from Appendix B in *UltraMetabolism*. It is provided again here so you can easily cross-reference this information with the chart above.

Herbs

The quality and beneficial effects of an herb depend on the field in which it was grown, its harvesting, shipping, and storage, the processing of the raw materials, the variation in active ingredients from batch to batch, and any unintentional contaminants, as well as the form and dose in which the herb is finally ingested. Given those variables, it is hard to imagine that it is possible to find herbs of good quality. It often takes homework, but I tend to rely on those companies that do most of the homework for me through their fastidious standards. Below you will find more information on specific brands I recommend.

ASHWAGANDHA

This Indian herb is a commonly used stress reducer and immune booster or adaptogen. The dose is 150 mg once or twice a day.

CAPSAICIN

This is an extract of cayenne pepper and can be used to reduce cholesterol and lower blood pressure, but is often used as a topical painkiller for arthritis. There is actually a prescription medication for topical application. Capsules of cayenne, or preparations containing cayenne, can be a useful adjunct to treating inflammation. The supplement dose is measured in heat units, often up to 100,000 a day.

CINNAMON

Recent studies have found cinnamon at doses of 1 to 2 grams to be a potent aid in normalizing blood sugar in people with diabetes. It can be taken as a supplement in capsule form. Getting it on French toast is not going to work!

COCOA

Emerging as the king of antioxidant and anti-inflammatory polyphenols, cocoa contains PEA, or phenylethylamine, which mimics the love molecules in your brain, and is a great source of OEA, the special fat that turns on your metabolism. A little dark chocolate is good for the body and the soul.

ENZYMES (BROMELAIN AND OTHER PROTEOLYTIC ENZYMES)

Bromelain is the most well known anti-inflammatory enzyme. It is found in pineapple stems and helps with many inflammatory problems, including trauma and muscle injury as well as asthma, arthritis, and colitis. The dose is about 600 mg a day taken in divided doses between meals. Take a capsule rated at least 2000 GDU.

FENUGREEK

Fenugreek seeds, crushed into a powder and taken in relatively large amounts (25-50 grams a day), can significantly lower blood sugar and blood fats. Smaller amounts can also be useful. For people who have significant sugar problems, this can be a helpful herb.

GINGER

This is another great addition to your daily meals (but not necessarily in gingerbread cookies, ginger ale, or pumpkin pie!). It can help thin the blood, lower cholesterol, and prevent nausea, and also acts as a potent anti-inflammatory. Use fresh ginger in cooking or take ginger in two to four 500 mg capsules per day. Look also for extracts standardized to 5 percent gingerols. Or just use it in everyday cooking.

GINSENG

Panax ginseng—Chinese or Korean ginseng

Panax quinquefolium—American ginseng

There is some evidence that ginseng may help regulate insulin and blood sugar, enhance immunity and adrenal function, and improve your ability to cope with stress. Take 200 mg of a standardized extract twice daily.

GREEN TEA

This everyday beverage in China contains a class of compounds called polyphenols, a type of flavonoid that contains epigallocatechins, which boosts liver detoxification; reduce cholesterol, inflammation, and oxidative stress; and can help prevent cancer and heart disease. It is also thermogenic and may help increase metabolism and help with weight loss.

The dose is about 240-320 mgs of phenols per day. Look for brands containing green tea extract standardized to 80 percent total polyphenols and 55 percent epigallocatechin gallate.

LICORICE

The Chinese, Greeks, and Native Americans have used this for centuries as a medicinal plant. It has potent anti-inflammatory effects that come from its main chemical component glycyrrhizin, it helps to balance the adrenal glands, and has antiviral properties. This does not include the junk-food type of licorice. Use three to six capsules totaling 900 mg a day a day, but be careful if you have high blood pressure and fluid retention. You must monitor for these side effects, but for those with adrenal exhaustion manifested by low blood pressure and dizziness, this can be just the trick.

MILK THISTLE (SILYMARIN)

Milk thistle is also known as silymarin. This is an old herbal remedy for liver disease that has been shown in controlled studies to improve liver function in people with alcoholic and infectious hepatitis. It works by increasing the synthesis of glutathione, as an antioxidant, and by increasing the rate of liver tissue regeneration. The standard dose is 70 to 210 mg a day. I recommend the standardized form from Germany that has been proven in research trials.

QUERCITIN (FRUIT AND VEGETABLE RIND)

Quercetin is the king of bioflavonoids. This potent plant bioflavonoid comes from onions and garlic and has anti-inflammatory and antihistamine properties. In part it acts by preventing the release of histamine from mast cells (special white blood cells that contain histamine) and can help with food and environmental allergies. For a food allergy, take 500 mg about 15 minutes before meals to reduce food reactions.

RHODIOLA

This relative newcomer to the herbal world of adaptogens is called Arctic root. It has few side effects and gently boosts energy and increases your resistance to stress. The dose is 100 mg to 200 mg twice a day standardized to 3 percent rosavin.

SIBERIAN GINSENG

This Arctic tonic was used by Russian cosmonauts to boost their mental and immune functioning under the stress of space travel. It is less stimulating than Chinese or American ginseng and can be a very good immune and adrenal tonic for regular use. The dose is about 200 mg two or three times a day of a standardized extract.

TURMERIC

This is the yellow spice commonly found in curry or yellow rice. It can be a powerful ally against inflammation and oxidative stress and is useful in many inflammatory conditions. The dose is about 400 to 1200 mg a day of curcumin, which is the active ingredient.

Supplements

There are many special supplements that have multiple benefits across multiple keys. That is because the body runs on some very specific raw materials, and when things get rough (as in illness or obesity) more of these raw materials are needed to keep up with the demand. Rather than repeat the supplements over and over in each chapter, I highlight them in the chapter where they have the most benefit. Just remember that some special supplements can reduce inflammation and oxidative stress, improve mitochondrial function, and help you detoxify.

ACETYL L-CARNITINE

This is another important amino acid that helps transport fat into the mitochondria for burning. People who have genetic problems with their mitochondria—such as diabetics or those with insulin resistance—can be helped by this nutrient. It has been shown to help prevent damage and improve the activity of mitochondria in aging.

- 500 to 2000 mg a day

ALPHA LIPOIC ACID

Alpha lipoic acid is a powerful antioxidant and metabolic booster that has been shown to reduce blood sugar and prevent diabetic complications. It helps recycle antioxidants, including vitamin C, E, and beta-carotene, making them more available to quench free radicals. It is also important as an antioxidant defense for the mitochondria and helps improve energy metabolism.

- 100-300 mg twice a day to help improve insulin resistance

AMINO ACIDS: THE BUILDING BLOCKS OF PROTEIN

Some amino acids are important parts of the energy production cycle in the mitochondria. They also aid in detoxification. Providing enough of these is important. Occasionally supplements can help.

Take a few grams of a balanced amino acid powder, or take

- **taurine** (500 mg twice a day) and glycine (500 mg twice a day) to help with detoxification;
- **arginine**, an essential amino acid that helps to dilate arteries, improves blood flow, and lowers blood pressure, and may improve insulin resistance (the dose is 500 to 2000 mg a day);
- **aspartic acid combined with magnesium** (200-400 mg a day) to help boost energy production in the mitochondria

B-COMPLEX VITAMINS

Our need for B vitamins increases with stress. They help us improve the metabolism of stress hormones so we can get rid of them. They are part of your basic multivitamin, but taking an additional B-complex in times of increased stress can be helpful.

BIOFLAVONOIDS (CITRUS, PINE BARK, GRAPSEED, GREEN TEA)

These compounds are the key plant compounds or pigments—about 4000 in total—that provide the color for our plants. They are often combined with vitamin C in supplements to prevent their destruction or oxidation. Familiar compounds rich in bioflavonoids include citrus foods, ginkgo biloba, bilberry, genistein from soy, red wine (resveratrol), and green tea

(catechins). They can all be used as part of your diet or in supplements to reduce inflammation and oxidative stress.

Here are some of the more important ones:

- **Quercetin**—The king of bioflavonoids. This potent plant bioflavonoid, which is derived from onions and garlic, has anti-inflammatory and antihistamine properties. In part it acts by preventing the release of histamine from mast cells (special white blood cells that are active in the inflammation response) and can help with food and environmental allergies. For a food allergy, take 500 mg about 15 minutes before meals to reduce food reactions.
- **Pycnogenol or grapeseed extract**—This contains potent anti-inflammatory and antioxidant bioflavonoids called proanthocyanidins. The dose is between 50 and 300 mg a day.
- **Rutin**—This is a powerful bioflavonoid, and is helpful for inflammation of the blood vessels.

COENZYME Q10

CoQ10 is a part of a critical step in the mitochondria involved in energy production, and helps boost metabolism. It also acts as an antioxidant. People who take the class of cholesterol-lowering drugs called statins deplete their CoQ10 levels because the same process in the body that produces cholesterol also produces CoQ10. In Parkinson's disease, the mitochondria are damaged by toxins. CoQ10 has been shown to slow or stop the progression of Parkinson's without any side effects when given in high doses (1200 mg a day).

- 50 to 1200 mg a day

CREATINE POWDER

Creatine is another amino acid, or building block of protein, used for energy production in the mitochondria. It is commonly used by body builders to increase muscle mass. Recently research has shown it effective in preserving or increasing muscle mass in muscle-wasting diseases such as muscular dystrophy and ALS (amyotrophic lateral sclerosis, or Lou Gehrig's disease). It can be used to build muscle and improve stamina and help your mitochondria produce energy.

- 2 to 4 grams a day

D-RIBOSE

This sugar is the raw material for energy production and the creation of ATP in the cells. Along with carnitine, CoQ10, and magnesium, it helps your mitochondria generate more energy. It comes in a powder.

- 5 grams mixed with water once or twice a day

EXTRA-BUFFERED VITAMIN C WITH MINERAL ASCORBATES

We have no ability to increase our vitamin C production like most mammals under stress. Taking extra vitamin C helps support your adrenal glands and your immune system during stress. During any state of toxicity, vitamin C needs are increased. There has also been good evidence that those with higher vitamin C levels excrete more heavy metals like lead and mercury.

- Take 1000–4000 mg a day in powder, capsule, or tablets during periods of increased detoxification. This can cause loose stools. If it does, just reduce the dose or stop it.

GLA OR GAMMA LINOLENIC ACID (BORAGE OR EVENING PRIMROSE OIL)

This is one of the good and essential omega-6 fats that our body can't produce. It is helpful in reducing inflammation and can help lower blood pressure and cholesterol as well as improve fat metabolism in people with diabetes. Taking 1 or 2 grams of evening primrose oil is a good way to get these essential fatty acids.

- One to 2 grams of evening primrose oil twice a day can reduce inflammation and improve metabolism.
- Take 500 mg to 1000 mg twice a day.

MAGNESIUM

Magnesium is the ultimate relaxation mineral. Under times of stress magnesium is excreted in our urine. If we are deficient in magnesium we tighten up everywhere—headaches, constipation, palpitations, muscle cramps, and irritability. Additional magnesium is important for many people.

- If you tend to be constipated, use magnesium citrate (150 mg) once or twice a day. If you tend to have a sensitive stomach and loose bowels, use magnesium glycinate (150 mg) once or twice a day. If you are taking too much and have loose bowels, just reduce the dose.

N-ACETYLCYSTEINE (OR NAC)

This amino-acid-derived, sulphur-containing molecule is a key part of the way the body manufactures glutathione. In fact, it is used in emergency rooms to treat Tylenol overdose and liver failure, and to prevent kidney failure for patients in hospitals getting X-rays or angiograms using dyes that can damage the kidneys. Taking this as a supplement can boost the body's own glutathione, which is one of the critical antioxidants that protects the mitochondria.

- 500 to 2000 mg a day

NADH

This is another little molecule the body makes that can get depleted, and is part of the critical energy production process in the mitochondria. NADH has been used effectively in patients with chronic fatigue syndrome—a condition of malfunctioning and poisoned mitochondria. It can have an energy boosting and alertness effect, like caffeine without the jitters.

- 5 to 20 mg a day

PGX (POLYGLYCOPLEX) OR KONJAC ROOT FIBER

This is the special superfiber that is very viscous and soaks up fat, sugar, and water in the gut and reduces the overall glycemic load of any meal you eat. I have found this a uniquely powerful, safe way to promote weight loss and lower blood sugar and cholesterol in many patients.

- Take two to four capsules before each meal.

PROBIOTICS

These are found in fermented foods like yogurt, but to obtain optimal amounts use probiotic supplements, which include lactobacillus acidophilus, lactobacillus rhamnosis, and bifidobacteria. By restoring the normal gut flora, probiotics reduce overall immune activation

and have been proven effective in many inflammatory diseases, including asthma, eczema, rhinitis, and inflammatory bowel disease. They work by balancing the GALT, or gut-associated lymphoid tissue.

These are found in the refrigerated section of most health-food stores.

- Look for capsules containing 5 to 10 billion live organisms. Higher doses are often used in severe inflammatory conditions.

ZINC

Zinc is important for almost every function of the body, as well as in the normal function of the adrenal glands, the modulation of stress hormones, and the support of the immune system. Its lack is one of the most common nutritional deficiencies worldwide. Your multivitamin will support your basic needs, but additional stress increases your needs.

- Take an extra 15 to 30 mg of zinc a day. Ideal forms are zinc citrate, picolinate, aspartate, or chelate.

PURCHASING SUPPLEMENTS

Finding the best products to support health has always been the most difficult part of my job. Fortunately, in a sea of poor quality and lowered standards, there are a few companies that stand out and have stepped up to the responsibility of producing safe and effective products. They meet my specific criteria for quality and effectiveness.

While I have tried to make educated judgments about companies and their products, I am unable to verify all claims about every product. Therefore each person must be cautious and evaluate companies and products for him- or herself. I offer this only as part of my hard-won knowledge about how to evaluate supplements.

1. Look for GMP (good manufacturing practices) drug or supplements standards from an outside certifying body.
2. Try to verify third-party analysis for active ingredients and contaminants (see www.consumerlab.com).
3. Try to use products that have some basis in basic science or clinical trials, or have a long history of use.
4. Use clean products, free of fillers, binders, excipients, flow agents, shellacs, coloring agents, gluten, and lactose.

While I do not officially endorse or have any consulting or employee relationship with any supplement companies, I do believe a few have risen to the top of the supplement industry and can be safely used to help support and enhance your health.

Unfortunately, many of these products are designed for therapeutic use by physicians, nutritionists, and other health care practitioners and are unavailable to the average consumer.

The Lenox Village Integrative Pharmacy has researched many of the best quality supplements on the market. You can receive guidance from expert pharmacists and order by phone at 888-796-1222.

There are also some other good resources for high-quality products. Emerson Ecologics is a distributor of high-quality professional-brand nutritional supplements. Metagenics and Prothera also produce a broad range of high-quality professional supplements. You can call them directly at the following numbers:

To order products from Metagenics, please call (800) 692-9400.

To order products from Prothera, please call (888) 488-2488.

To order products from Emerson Ecologics, please call (800) 654-4432.

SECTION 4

Tests: Where to Get Them, How to Interpret Them

In my practice I use testing as a way to identify and pinpoint specific problems in each of the 7 keys. I strongly urge you to do the same. If you scored in the moderate to high ranges on any of the quizzes in the keys, I suggest you do some additional testing to help you understand how severe your problem is and to pinpoint specific areas where you can change.

In *UltraMetabolism* I gave you information on the appropriate tests to take in each of the chapters in part two.

What follows is a list of testing laboratories, the tests you should take divided by key, advanced testing recommendations if the results from your first battery of tests aren't clear, some references about the results you are looking for, and information about where you can order specific tests if you need them.

TESTING LABORATORIES

1. **www.questdiagnostics.com** (a resource for most conventional laboratory testing needs)
2. **www.liposcience.com** (innovative nuclear medicine spectroscopy for the assessment of lipid particle size and improved accuracy in assessing cardiovascular risk factors)

3. **www.igenex.com** (specialized testing for detecting chronic infections such as Lyme disease with PCR technology)
4. **www.doctorsdata.com** (experts in testing for heavy metal toxicity and other nutritional and metabolic disorders)
5. **www.metamatrix.com** (leaders in nutritional and metabolic testing)
6. **www.genovations.com** (genetic testing of SNP—single-nucleotide polymorphisms—to help identify disease predispositions that can be modified with lifestyle interventions)
7. **www.prometheuslabs.com** (leaders in testing for gluten-related disease)
8. **www.immunoscienceslab.com** (leaders in immunological and infectious diseases assessments)
9. **www.immunolabs.com** (IgG food sensitivity testing)
10. **www.nowleap.com** (testing for immune reactions to foods and chemicals)
11. **www.yorkallergyusa.com** (IgG food sensitivity testing)
12. **www.enterolab.com** (home stool gluten-sensitivity testing)
13. **www.melisa.org** (testing for the toxic immunological effects of mercury and other heavy metals)
14. **www.accuchem.com** (a laboratory specializing in occupational and environmental toxicology)

BASIC SUGGESTIONS FOR TESTING

If you are struggling with your weight, the tests in **bold** should be done if at all possible. The other tests are ideal, but optional. Advanced testing is done only if the answer is not clear from the preliminary tests.

The tests are listed by which *UltraMetabolism* Key they relate to.

Key # 1: Control Your Appetite

- **Insulin and glucose tolerance test: two-hour insulin- and glucose-response test—the best test for insulin resistance**
- **Triglyceride and HDL levels—a measure of fats in your blood**

Key # 2: Subdue Stress

- Stress/Cortisol
 - a. Twenty-four-hour urinary cortisol test—a measure of stress hormone in the urine
 - b. **Adrenal Stress Index—four separate saliva tests for cortisol at four different times of the day**
 - c. IGF-1—a measure of growth hormone

Key # 3: Cool the Fire of Inflammation

- **High-sensitivity C-reactive protein (hs-CRP)—the best test for inflammation**

Key # 4: Prevent Rust or Oxidative Stress

- Oxidative Stress
 - Lipid peroxides—a blood test measuring rancid fats
 - Antioxidant levels—levels of certain vitamins
 - 8-OHdG—markers of damaged DNA

Key # 5: Turn Calories into Energy

- Mitochondria
 - Urinary organic acids—a measure of byproducts of metabolism
 - VO₂ Max—cardio metabolic testing—a test for oxygen-burning capacity

Key # 6: Fortify Your Thyroid

- Thyroid function tests—a series of tests that best identify thyroid status
 - **TSH, free T3, free T4, TPO, and antithyroglobulin antibodies**
 - Basal body temperature

Key # 7: Love Your Liver

- **Liver function tests—blood test to identify fatty liver**
- Detoxification genomics—special test for genes that measures our ability to detoxify

ADVANCED TESTING RECOMMENDATIONS

If the results aren't clear from the basic tests suggested above, you should consider these advanced tests. These tests are best ordered and interpreted by a physician experienced in functional medicine. See www.ultrametabolism.com for referral information on trained physicians.

All tests are available at standard laboratories such as Quest Diagnostics (www.questdiagnostics.com) if not otherwise noted.

If a special laboratory is required, its Web site is listed after the test.

CONTROLLING YOUR APPETITE: TESTING FOR INSULIN RESISTANCE AND RELATED DYSFUNCTIONS

The following blood tests are necessary for a full assessment of metabolic syndrome or prediabetes.

- Total cholesterol, HDL-C, LDL-C, triglycerides (low HDL levels <50 for men, <60 for women, high triglycerides >100)
- Triglyceride/HDL ratio of greater than five
- NMR lipid profile (assessment of lipid particle size—small LDL and HDL particles and large VLDL particles) www.liposcience.com
- Seventy-five-gram glucose tolerance test with insulin levels (FBS >90, fasting insulin >8, two-hour BS >140, two-hour insulin >40): a measure of your ability to respond to sugar load and the gold standard for diagnosing insulin resistance
- Fibrinogen (>350): a clotting factor in the blood that increases with inflammation and insulin resistance
- Uric acid (>7.0): a byproduct of protein metabolism that causes gout and increases in insulin resistance
- High-sensitivity C-reactive protein (>1.0): the best measure of hidden inflammation in the body
- Homocysteine (>8.0): a sensitive marker for folic acid deficiency
- Ferritin (>200): a measure of excess iron stores that increases with inflammation and insulin resistance

- Liver function tests (elevated AST, ALT, GGT): tests that identify the death of liver cells, most often caused by elevated insulin resistance because of a fatty liver
- Sex hormones (estradiol and free testosterone): high estrogen and low testosterone in men, and high testosterone in women
- Low serum magnesium (<2.0): a mineral deficiency often found in insulin-resistant patients

Stress

- Cortisol levels (blood taken at 8 a.m. and 4 p.m.): the main stress hormone
- DHEA-S or unconjugated DHEA: an adrenal hormone that is low in stress
- Twenty-four-hour urinary test for free cortisol and catecholamines: a measure of the quantity of stress hormones you produce
- Adrenal Stress Index: four separate saliva tests for cortisol at four different times of the day (www.diagnostechs.com)
- Cortrosyn stimulation test for adrenal reserve: an injection of the pituitary hormone ACTH with a follow-up cortisol test to see if your adrenal glands are burned out and can't respond to the normal signals from the brain

Inflammation

- High-sensitivity C-reactive protein (the marker of inflammation)
- IgG food sensitivity (special antibody tests against food) (www.immunolabs.com)
- Elimination/provocation
- ELISA/RAST IgE for type 1 or acute hypersensitivity reactions to food or environmental allergens
- Gluten allergy/celiac disease testing (all these tests help identify various forms of allergy or sensitivity to gluten or wheat)
- IgA anti gliadin antibodies
- IgG anti gliadin antibodies
- IgA antiendomysial antibodies

- Tissue transglutaminase antibody (IgA, and IgG in questionable cases)
- Stool antigliadin IgA and tTG (www.enterolab.com): a home test kit for wheat or gluten allergy
- HLA DQ2 and DQ8 genotyping: gene testing for the celiac or gluten sensitivity gene (www.prometheuslab.com)

Oxidative Stress

- Lipid peroxides (TBARS) in urine or serum: a measure of rancid fats in your blood (www.metametrix.com)
- Urinary 8-hydroxy-2-deoxyguanosine: a marker of DNA damaged by free radicals (www.metametrix.com)
- Whole blood or intracellular glutathione and reduced glutathione: a measure of the reserves of our most powerful antioxidant (www.gsdl.com or www.immunoscienceslab.com)
- Antioxidant enzyme assays of our main antioxidant enzymes: superoxide dismutase (SOD), glutathione peroxidase (GSHPx), and catalase (www.gsdl.com)
- Assessment of iron overload: transferrin saturation, ferritin, serum iron, and total iron binding capacity
- Blood tests for antioxidants levels can be occasionally helpful, including vitamin A, vitamin E, CoQ10, and beta-carotene (www.metametrix.com)

Mitochondrial Dysfunction

- Organic acids: a urine test to measure the byproducts of metabolism, nutritional deficiencies, and more (see glossary) (www.metametrix.com or www.gsdl.com)
- Cardiometabolic stress testing (VO₂ Max): a measure of the oxygen you consume during exercise, which is directly related to your fitness level and calorie-burning capacity. Must be done by a physician in a special exercise physiology practice.
- Muscle biopsy (rarely done to look for mitochondrial diseases)

Thyroid Dysfunction

Check the following tests:

- TSH (ideal range is between 1 and 2): a measure of the pituitary hormone that controls the thyroid
- Free T3 and free T4: a measure of the circulating thyroid hormones
- TPO (thyroid peroxidase) and antithyroglobulin antibodies: autoimmune antibodies in the thyroid gland that interfere with its function

If you have “normal” test results, you might need to look at other tests, including the following:

- TRH stimulation test: a special test done by the doctor to identify thyroid problems related to the pituitary rather than the thyroid gland
- Twenty-four-hour urine test for thyroid hormones (www.antibodyassay.com)

Other things to consider:

- Celiac antibody testing (IgG and IgA antigliadin antibodies and tissue transglutaminase antibodies), see above
- IgG food sensitivity testing, see above
- Mercury testing (hair, blood, or urine DMSA, or DMPS provocation testing), see below
- Twenty-four-hour urinary free cortisol or cortisol saliva testing (measurement of stress hormone levels)

Detoxification

- Genetic testing of detoxification pathways (SNPs): special testing for the genes that regulate our ability to eliminate toxins (www.gsdl.com)
- Detoxification challenge test (provocations with caffeine, aspirin, acetaminophen): measurement of how our bodies detoxify common medications or drugs (www.gsdl.com)
- Measurement of detoxification enzymes (www.gsdl.com)
 - Reduced glutathione

- Glutathione peroxidase
- SOD (super oxide dismutase)
- Heavy metals (www.doctorsdata.com)
 - RBC or whole blood
 - Hair analysis
 - Chelation challenge with DMPS or DMSA
- Urinary organic acids (www.metametrix.com, www.gsdl.com)
 - Specific compounds measured, including sulfates, pyroglutamate, orotate, and others, can give clues to problems with detoxification pathways
- Chemical antibodies to various toxins and metals (can occasionally be useful) (www.antibodyassay.com)
- Organophosphates: identified through a 24-hour urine collection test (www.accuchem.com)

SECTION 5

Shopping Lists for the *UltraMetabolism* Menus

As promised in *UltraMetabolism*, I have included the shopping lists here for your convenience. Feel free to print these out as necessary so you can easily take them with you when you go to the grocery store.

PHASE I SHOPPING LIST

These are the total amounts for one week, including fruit and veggie snacks. It is recommended that you shop for fresh produce at least twice weekly. Feel free to make produce substitutions based on season and availability of the freshest produce available.

Vegetables

Arugula, ½ pound
 Asparagus, 1 bunch (about ½ pound)
 Baby bok choy, ½ pound
 Baby mixed greens, 2 pounds
 Baby spinach, ½ pound
 Belgian endive, 1 head
 Bean sprouts, 2 ounces
 Boston lettuce, 1 head
 Broccoli, 1 head
 Carrots, 2, and 1 package organic baby carrots for snacks
 Cauliflower, 1 small head or 1½ pounds
 Celery, 1 bunch
 Cucumbers, 4
 Daikon radish, 1
 Escarole, 1 small head (½ pound)
 Garlic, 5 bulbs
 Ginger, fresh, 3-inch piece
 Herbs (bunches): Rosemary (1) Parsley, flat-leaf (1), Cilantro (1), Tarragon (1)
 Olives: 20 green, 10 kalamata
 Onions: 5 yellow, 2 red
 Pepper, red bell, 2
 Radishes, 1 small bunch
 Romaine lettuce, 1 small head
 Scallions, 1 bunch
 Snow peas, 2 ounces
 Sweet potatoes, 2
 Watercress, 2 bunches

Fruit

Apple, 3
 Avocados, 3
 Bananas, 2
 Berries, any type, 3 pints
 Coconut, 1 wedge (2" × 2" × ½")
 Figs, 5 (green or black)
 Lemons, 4
 Limes, 3
 Oranges, 2
 Peaches, 2 (or 1 10-ounce package frozen if not in season)
 Pears, 2

Nuts and Seeds

(Purchase raw nuts and seeds and store in refrigerator; these amounts include nuts/seeds for snacks.)

Almonds, ½ pound
 Brazil nuts, ¼ pound
 Cashews, ¼ pound
 Flaxseeds, 1-pound package
 Hazelnuts, ¼ pound
 Pine nuts
 Sesame Seeds, ½ pound
 Walnuts, ½ pound

Meat, Fish, and Poultry

Boneless, skinless chicken breast, 16 ounces
 Boneless, skinless split chicken breasts,
 2, 4 ounces each
 Roast turkey breast, 6 to 8 ounces
 Boneless lamb loin, 1 pound
 Wild salmon, 8 ounces
 Fresh sole, 8 ounces

Frozen

Frozen shrimp, cooked, large size, ½ pound
 Frozen mixed berries, 1 10-ounce package

Organic Soy Products

(Found in produce and refrigerated sections)

Plain, unsweetened soymilk, 1 gallon
 (gluten-free brand such as Silk)
 Plain, unsweetened soy yogurt, one 8-ounce
 carton (Nancy's is one good brand)
 Silken tofu, 1 package
 Extra-firm tofu, 1 package

Whole Grains (gluten-free)

These grains will be used in all phases.

Amaranth, 1-pound package
 Brown rice, long grain, 1-pound package
 Buckwheat groats (kasha), 1-pound package
 Corn tortillas (sprouted grain), 1 package
 Quinoa, 1½ pounds
 Wild rice, one 8-ounce box

Pantry

Artichoke hearts, 1 jar or prepared artichoke
 antipasto (natural food brand)
 Beans (canned): aduki, 1 can; black beans,
 1 can; chickpeas or garbanzos, 1 can;
 white beans, 1 can; vegetarian refried
 beans (nonfat), 1 can
 Chocolate, dark, 1 ounce
 Cocoa powder, 1 container
 Coconut milk, light, 2 cans
 Yellow split peas, 2 cups or 1 package

Staples

These items will be used in both phases, and they will not be included in the Phase II shopping list since they will now be in your staple pantry.

Cocoa nibs, 1 cup
 Chicken stock/broth, organic, low-sodium,
 and gluten free, 3 32-ounce containers
 Dijon mustard, 1 jar
 Nut butters: almond and cashew, 1 jar each
 Oils (purchase expeller-pressed oils in small
 bottles and store in a cool, dark place)

- Extra-virgin olive oil, 1 small bottle
- Sesame and toasted sesame oil, 1 small bottle each
- Walnut oil, 1 small bottle

 Pomegranate molasses, 1 bottle
 Red curry paste, 1 small jar
 Rice vinegar, unseasoned, 1 bottle
 Salsa, chunky style, 1 small jar
 Soy sauce, reduced-sodium, gluten-free,
 1 bottle
 Tahini (sesame seed paste), 1 small jar
 Tea bags, green, 1 box
 Vegetable stock/broth, organic, low-sodium,
 and gluten free, 2 32-ounce containers

Herbs, Spices, and Seasonings

Purchase in small quantities (¼ ounce or less), as these are used in various recipes throughout all phases and others are added to this list in Phase II and III.

Allspice, ground

Cardamom, ground

Chili powder, ground

Cinnamon, ground

Cumin, ground

Curry powder

Dry mustard

Garam masala

Ginger, ground

Italian seasoning

Nutmeg, ground

Peppercorns, whole black

Sea salt

Tarragon, ground

Turmeric, ground

PHASE II SHOPPING LIST

Vegetables

Arugula, ½ pound
 Baby bok choy, 4 heads, ¼ pound each
 Baby mixed greens
 Broccoli rabe, 2 bunches
 Carrots, 1 bag baby carrots
 Celery, 1 bunch
 Cucumbers, 11
 Daikon radish, 1
 Delicata squash, 1
 Garlic, 2 bulbs
 Ginger, fresh, 3-inch piece
 Herbs (bunch): Parsley (1), Dill (1),
 Oregano (1), Peppermint (1), Rosemary (1),
 Thyme (1), Cilantro (1), Spearmint (1)
 Kale, 1 head
 Mustard greens, 1 bunch
 Napa cabbage, 2 heads
 Olives, 8 green and 4 black
 Onions, 2 yellow and 2 red
 Peppers, green bell, 3
 Peppers, red bell, 4
 Peppers, yellow bell, 1
 Scallions, 2 bunches
 Shallots, 3
 Spinach, 1½ pound
 Sweet potatoes, 2
 Tomatoes, grape, 1 package and 3 plum
 tomatoes
 Watercress, 2 bunches

Fruit

Apples, 4, any variety
 Avocado, 1
 Bananas, 2
 Berries (any type), 3 pints
 Blueberries, 1 pint
 Grapes, red seedless, 1 bunch
 Kiwi, 3
 Lemons, 5
 Limes, 2
 Oranges, 2
 Pears, 3
 Raspberries, ½ pint
 Strawberries, 1 pint

Nuts and Seeds

Almonds, 1 pound
 Brazil nuts, 1 pound
 Cashews, ¼ pound
 Pistachios, ¼ pound
 Pumpkin seeds, ½ pound
 Walnuts, ½ pound
 Sunflower seeds, ½ pound

Meat, Fish, and Poultry

Chicken breasts, skinless and boneless,
 1 pound, or chicken tenders
 Turkey breast cutlets, 6 to 8 ounces
 Lamb loin chops, 2 1-ounce chops
 Alaskan halibut, 2 4- to 6-ounce steaks
 Shrimp, 8 ounces, large size
 Sea scallops, 1 pound

Eggs and Dairy

Omega-3 organic eggs, 2 dozen
Feta cheese, 4 ounces

Soy Foods

Plain, unsweetened organic soymilk, 1 quart
Plain, unsweetened soy yogurt, one 8-ounce carton
Silken tofu, 1 small package
Greek plain yogurt, 1 8-ounce carton

Dairy

Greek plain nonfat yogurt, 2 8-ounce cartons
Plain nonfat yogurt, 2 8-ounce cartons

Frozen Foods

One 10-ounce package frozen mixed berries
One 10-ounce package frozen corn
One 10-ounce package frozen edamame (soybeans)
One 10-ounce package frozen dark peaches

Whole Grains and Whole-Grain Products

Steel-cut oats, 1 cup (1 box or canister)
Quinoa, 1 cup
Whole rye or flax bread, 3 slices (dense German type)
Sprouted-grain cereal, 2¼ cups (1 box)
Pitas, whole grain or sprouted grain, 2
Sprouted-grain tortillas, 4
Whole- or sprouted-grain bread crumbs ¾ cup
Wheat germ, raw, 1 box

Pantry

Artichoke hearts, 1 jar
Beans, canned: chickpeas (garbanzo), 1 can; black, 1 can; kidney, 1 can; pinto 1 can
Coconut, grated, 2 teaspoons
Dark chocolate, 1½ pounds
Dried wild blueberries, ½ cup
Dried cranberries, ⅓ cup
Hearts of palm, 1 jar
Roasted red peppers, 1 jar
Tomatoes, diced, 2 14.5-ounce cans
Tomatoes, plum 1 16-ounce can
Wild salmon, 2 6-ounce cans

Staples

Almond flour, 1-pound package
Baking powder, 1 can
Blackstrap molasses, 1 jar
Cocoa nibs, 1 cup
Coconut milk, light, 1 can
Grapeseed oil, 1 small bottle
Soy flour, 1 small package
Soy mayonnaise, 1 small jar
Vanilla extract, 1 small bottle
Tamari, low sodium, 1 bottle
Vegetable broth, low sodium, organic, 1 pint
Worcestershire sauce (vegetarian), 1 small bottle

Spices and Seasonings

Cayenne pepper
Kelp powder
Oregano
Paprika
Thyme, dried
Wasabi powder

SECTION 6

What Are Organic Foods, Whole Foods, and Whole Grains?

Part of the power of the *UltraMetabolism* Prescription is the idea that you take a step back toward the evolutionary roots of the human diet. People evolved eating whole, organic foods. Our bodies are designed to properly digest these kinds of foods, not the highly processed “garbage foods” on the market today.

Unfortunately, our culture is so far from this fundamental understanding of how to eat that you may not be completely clear on what I mean by “whole, organic foods.” This problem is complicated by the fact that in the world of organic food a lot of different terminology has sprung up that describes how processed that food is.

To help you clarify the definitions in the book as well as the ones you will see on your supermarket shelf, I have compiled the information in this section of the guide. Take it with you when you buy groceries until you feel comfortable with all the terminology that’s out there these days.

WHAT IS A WHOLE FOOD?

Whole foods are foods that are in the form in which they are found in nature—fresh, unprocessed, and simple. These include the following:

High-fiber foods

- Beans
- Whole grains
- Vegetables
- Fruits
- Nuts
- Seeds

Quality Proteins

- Beans
- Nuts
- Eggs
- Fish
- Lean poultry, lamb, pork, or beef (preferably organic, grass-, or range-fed)

Healthy Fats

- Fish oil
- Olive oil and olives
- Avocados
- Coconut oil (organic extra-virgin)
- Nuts and seeds, and nut and seed butters

Healthy Carbohydrates

- Vegetables
- Fruit
- Beans
- Whole grains

WHAT IS ORGANIC?

There are a number of terms related to “organic” food products. The following information should help you understand what these terms mean and assist you in choosing quality food products that are raised naturally and have minimal exposure to pesticides, herbicides, or antibiotics.

Organic: Organic foods are agricultural products that have been grown and treated in a way that is in closer harmony to the natural ecology of the area they are grown in. Organic produce is grown with few pesticides, and it is grown in a way that keeps the soil fertile and the water clean.

Certified Organic: Foods that are certified organic have been held to very strict standards by the National Organics Standards Board. These standards include a restriction on the use of chemicals of any kind.

Free-Range: This refers to a way of raising feed animals (chickens, pigs, and cattle) in which the animal is not confined to a feedlot, stockyard, coop, or barn. Animals raised in confined conditions tend to have more diseases, are less healthy, and are fed an unnatural diet and are therefore full of poor-quality saturated fats. Free-range animals, while not necessarily completely free of antibiotics (used to keep disease down in a feedlot), tend to be healthier.

Grass-Fed Beef: This beef comes from cattle that spend their lives roaming and eating grass in a pasture, as they evolved doing. Grass-fed cattle are not closed up in a stockyard, which means they have much less need for antibiotics. In addition, they move and eat a healthier, more natural diet, which means they are leaner. When you eat grass-fed beef you are eating leaner meat that has healthier saturated fats than feedlot cattle.

Grass-Finished Beef: Not all grass-fed cattle have been grass-fed their entire lives. In some cases marketers pass off cattle that have spent part of their lives in a feedlot as “grass-fed.” These cows may have eaten some grass, or spent some time in a pasture, but they have also been kept in feedlots. “Grass-finished” cattle have never seen a feedlot. They spend their entire lives in a pasture. This means that they are the cleanest form of beef you can find.

WHAT IS A GRAIN?

Whole grain: A whole grain is the “fruit” of grasses that used to be wild—oats, wheat, rye, barley, rice, etc. Eating a refined grain is like eating a piece of fruit without the skin or seeds—often two of the most nutritious parts. Each whole grain has a bran (skin), an endosperm (the inside of the fruit), and a germ (the seed). The endosperm is where all the starch

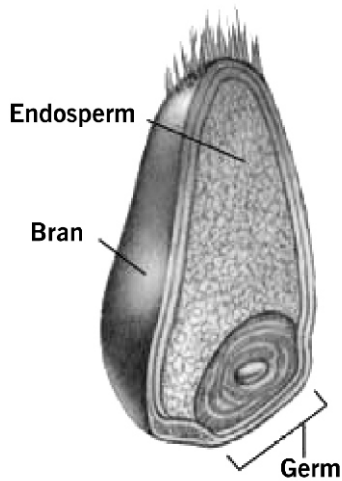


Figure 1: Anatomy of a Whole Grain

(sugar) is, the bran is the source of the fiber, and the germ is the source of vitamins and minerals. (See Figure 1.)

When choosing whole grains, look for brown rice, steel-cut oats, barley, buckwheat, or quinoa (see the “Grain and Beans Cooking Chart” for cooking suggestions).

Sprouted grain: A sprouted grain is a whole grain soaked in water that starts the germination process and makes the grain easier to digest. It is more slowly broken down in the gut and has a lower glycemic load than refined flour or grains. Try sprouted-grain bread or tortillas.

Refined grains: A grain that has the bran and germ removed is pure starch and is quickly absorbed, leading to surges in blood sugar and swings in appetite. It is commonly known as white rice, white flour, white bread, oatmeal, etc. Don't try this!

SECTION 7

Further Unraveling the Mystery of Carbohydrates

One of the surprising truths I unveiled in *UltraMetabolism* is that carbohydrates (contrary to popular belief) are the most important food in your diet. Without them you quickly become malnourished and your health declines—because they contain nearly all the vitamins, minerals, fiber, and phytonutrients needed for each of us to thrive.

But as you know by now, there is a big difference between the highly processed carbs that count for most of the real estate in your local supermarket and whole, unprocessed carbs. To help you identify the difference between “good” carbs and “bad” carbs, I suggest you replace all the old (and abundant) terminology surrounding carbohydrates with two simple concepts:

- Glycemic Load
- Phytonutrient Index

We defined the *glycemic load* of a meal as the total effect that a meal has on your blood sugar.

The *phytonutrient index* defines how many phytonutrients are in a given food.

When it comes to carbohydrates, the nutritional secret of the *UltraMetabolism* Prescription is simple:

Eat foods with a low GL and high PI.

To help you remember what this means, here is the chart of low-GL/high-PI foods listed in the book:

Low-GL/High-PI Foods
Vegetables
Fruit
Beans
Whole Grains
Nuts
Seeds
Unrefined expeller-pressed oils (extra-virgin olive oil, avocado oil, coconut oil, etc.)
Teas
Herbs and Spices

Remember that animal protein falls in a separate category because it does not have phytonutrients, so you can't choose the animal protein you eat based on these standards.

If you can remember this, you can forget about ALL the other terms used to define and describe carbohydrates.

However, if you are interested in being able to decipher the other terminology that revolves around carbs, this list should help you.

TERMINOLOGY RELATED TO CARBOHYDRATES

Simple carbohydrates: Mono- or disaccharides (the building blocks of all carbohydrates) that don't require much digestion; these include sucrose (table sugar) and fructose (fruit sugar). If simple carbs are found in fruit with plenty of fiber and antioxidants they are fine—so go for the blueberries.

Complex carbohydrates: Complex chains of single sugar molecules that form the starches we find in potatoes or bread. When found in certain foods like refined flour and white bread they raise your blood sugar dramatically and cause weight gain. Healthy forms are found in whole grains or beans and promote weight loss.

Low-glycemic-index carbohydrates: These typically raise your blood sugar slowly and are less likely to cause problems with weight and blood sugar—most whole foods such as beans, whole grains, most fruits, and vegetables fall in this category, with some exceptions.

High-glycemic-index carbohydrates: These raise your blood sugar quickly, which promotes weight gain—examples are bread, pasta, white rice, sugar, muffins, and most flour products.

Slow-release glucose (SAG): This is another term for carbohydrates that are released slowly into the digestive system and are absorbed slowly, resulting in a slower increase in blood sugar and insulin, and thus avoiding weight gain. These include vegetables, fruit, beans, nuts, seeds, and whole grains.

Rapid-release glucose (RAG): These carbohydrates are rapidly released in the gut and absorbed quickly, thus leading to a higher and more rapid rise in blood sugar and insulin. This causes more weight gain and an increase in appetite. These are the same as high-glycemic-load carbohydrates—bread, pasta, white rice, and flour products.

SECTION 8

Learn How to Read Food Labels

While the rule “if it has a label, don’t eat it” is the ideal, consumer demand has led to the creation of many foods that are clean, whole, simple, and that actually have understandable labels. These healthy packaged foods tend to be found in whole foods stores, or in the health-food section of your grocery store. (Ponder this: if there is a health-food section in the grocery store, what does that make the rest of the food sold there?) The general rule: If it has any ingredients you don’t recognize, you should likely stay away from it. Be a smart label reader. Labels contain both the ingredients and specific (but not all) nutrition information.

You can print out this guide and take it with you to the grocery store to help you read labels more precisely.

READING FOOD LABELS: IF YOU REALLY HAVE TO BUY SOMETHING PROCESSED

Beware of marketing. Remember, the front of the label is food marketing at its cleverest. It is designed to seduce you into an emotional purchase and may contain exaggerated claims.

Look for quality ingredients. Organic whole foods are now available in packages, cans, and boxes.

Where is the ingredient on the list? If the real food is at the end of the list and the sugars or salt is at the beginning of the list, beware. The most abundant ingredient is listed first and then the others are listed in descending order by weight.

Beware of ingredients not on the list: Foods that are exempt from labels include foods in very small packages, foods prepared in the store, and foods made by small manufacturers.

Look for additives or problem ingredients. If it has high-fructose corn syrup or hydrogenated or partially hydrogenated oils, put it back on the shelf. Search for any “suspect” additives.

Look for ingredients that don’t agree with you. Identify food ingredients you are sensitive to or react to, such as gluten, eggs, dairy, tree nuts, or peanuts. Be vigilant about reading labels, as these ingredients are often “hidden” in foods you least suspect. The labeling of common allergens is not always clear or helpful, and there have been recent recommendations to improve this for consumers, as with the Food Allergen Labeling and Consumer Protection Act 2004. (See www.celiac.com for lists of gluten-containing foods.)

Investigate unfamiliar ingredients. Investigate or use an Internet search engine to find a credible source to decipher any unfamiliar ingredients such as carmine, quorn, diacylglycerol, etc., on the label before you buy. Credible Internet sources tend to be on government or educational sites ending in “.gov” or “.edu” rather than “.com.”

Discover if any “functional food ingredients” are being added to the food product, such as live active cultures, beta-glucan (a viscous fiber), or plant sterols. Though they may be helpful, more often than not they are “window dressing” present in small amounts, and with minimal value except to the marketing department of the manufacturer. Examples of this include live active cultures added to high-sugar, high-fat yogurts or vitamins and minerals added to gumballs. In other words, it’s best to get healthful, functional food ingredients from their whole food sources, rather than as additives to otherwise nutritionally deprived foods.

Would your great-grandmother have served this food? Finally, before you analyze the numbers, ask yourself if this food could have been served at your great-grandmother’s table. She only served real food.

UNDERSTAND THE NUTRITION LABEL: THINK LOW GL AND HIGH PI

Look at the serving size and determine if this is your “typical” portion, as labels can be deceiving. For example, a cereal may state “3/4 cup serving” when your typical portion is 1½ cups. Or worse, it may say “2 servings,” when typically people consume the whole amount in the container or bottle. Have you ever known four people to share one pint of Hagen Daaz ice cream?

Are the calories high GL or low GL? Remember, the total amount of carbs is less important than where they come from. If they are found in foods with a low GL and high PI they will have

a very different effect on your appetite and weight than foods that are quickly absorbed and have few nutrients and fiber.

Start with fiber. It is one of the main factors that determine the all-important glycemic load; fiber can give you a clue about the PI. Many packaged foods have no fiber, while some healthy items such as oils, spices, and herbs are naturally devoid of fiber. If convenience items such as soups, entrees, or snacks are missing this key fiber factor, leave them on the shelf.

Total carbohydrates. Remember, it is the type of carbohydrates that matters most. If they are from whole plant foods containing plenty of fiber or have a low GL, their effect is very different from fiberless foods. The same amount of carbohydrates from a can of beans or from a can of soda affects the body in very different ways.

Where are the good fats? Monounsaturated and omega-3 polyunsaturated fats should dominate this category, with minimal amounts of saturated fat and zero trans fats (trans fat content will be present on food labels from 2006 on). Unfortunately, the omega-3 fats are rarely listed on the label. They are part of the polyunsaturated fat family. But they come from the good side of the family. Other processed and refined oils that are less than healthful also show up in this section of the label, including corn oil and safflower oil.

NOW FOR THE “NUTRITION FACTS” ON THE LABEL

Cholesterol. Your body (specifically your liver) makes more cholesterol in an hour than you ever eat in a day. As you have learned, more of the cholesterol comes from eating sugar than eating fat. There is little correlation between dietary cholesterol and blood cholesterol, and little reason to worry about this number on food labels.

Protein. If you eat a variety of whole foods you won't have to worry about protein because whole foods such as beans, soy foods, nuts, seeds, whole grains, and lean animal foods contain plenty of protein.

Sodium. If you are sodium sensitive, use this simple guideline: Double the calories to get an accurate estimate of how much sodium should be in the serving (for example, at 150 calories per serving, the maximum sodium per serving should be 300 mg). There's an exception: very low-calorie foods, as with some vegetables that have no added salt. Many processed foods have far more sodium than this. You will need to prepare fresh foods at home to recondition your palate to whole foods naturally low in sodium. The recommended daily intake of sodium for the average person is 1500 mg, or less than the amount in 1 teaspoon of salt (2400 mg). That includes salt added at the table, in cooking at the factory, or in a fast food kitchen (which is where most of our salt intake comes from—hidden in the processed and fast foods we

consume, including packaged meats, canned soup, and even cottage cheese). We should consume about ten times more potassium (in foods such as bananas, potatoes, spinach, and almonds) than sodium in our diet (mostly from plant foods), and we do the inverse—eat ten times as much salt or sodium as potassium.

Calcium. Add a zero to the calcium percentage on the label. This equals milligrams of calcium per serving, because the “% Daily Value” for calcium is based on 1000 mg. For example: 2 percent = 20 mg calcium or 30 percent = 300 mg. Remember that calcium is the only nutrient to which this rule pertains.

Other nutrients: B-12, iron, zinc, and other nutrients may have been added to the food product to enhance nutrient levels, and will be listed on the label if the product was “fortified.”

SECTION 9

Your Food Journal

Keeping a daily energy and food log while you are on the *UltraMetabolism* Prescription is an easy and effective way of understanding the relationship between the foods you eat, the way you feel, and how your food affects your weight. A written record of this kind is a far more effective way to track these relationships than simply trying to remember.

This is an especially important step as you start to reintroduce foods into your diet in Phase II. Remember that food can affect your body and your day-to-day health in a variety of ways. The reintroduction of foods to which you may be sensitive or allergic can trigger many symptoms, including

- nasal congestion
- chest congestion
- headaches
- brain fog
- joint aches
- muscle aches
- pain
- fatigue
- changes in your skin (acne)
- changes in digestion or bowel function

Journaling allows you to directly see the relationship between the food you eat and the symptoms you suffer from. Once you know this, you can change the way you eat based on the demands of your body. If you find that you have sensitivities to certain foods, cut them out of your diet for at least a month to test whether or not they are actually causing the problem. If they are, consider eliminating them from your diet completely. Experiment. Fine-tune the diet so it fits your needs.

I encourage you to keep a food journal while you are on the diet. The form below will help you do that. Print out a copy for each week you are on the diet. In the column on the left, record what you ate. In the middle column record the time your symptom occurred. And in the column on the right give a brief description of your symptoms. Remember, symptoms could be anything from physical ailments to fatigue to shifts in your mood. For that reason I suggest you consistently record how you feel after you eat. This will give you a practical, personal understanding of how food affects you.

Food Diary Week of: _____

Day and Meal	Time of physical symptom or mood change	Description of physical symptom or mood change
Monday		
Snack		
Lunch		
Snack		
Dinner		
Snack/Dessert		
Tuesday		
Breakfast		
Snack		
Lunch		
Snack		
Dinner		
Snack/Dessert		

Day and Meal	Time of physical symptom or mood change	Description of physical symptom or mood change
Wednesday		
Breakfast		
Snack		
Lunch		
Snack		
Dinner		
Snack/ Dessert		
Thursday		
Breakfast		
Snack		
Lunch		
Snack		
Dinner		
Snack/Dessert		

Day and Meal	Time of physical symptom or mood change	Description of physical symptom or mood change
Friday		
Breakfast		
Snack		
Lunch		
Snack		
Dinner		
Snack/Dessert		
Saturday		
Breakfast		
Snack		
Lunch		
Snack		
Dinner		
Snack/Dessert		

Day and Meal	Time of physical symptom or mood change	Description of physical symptom or mood change
Sunday		
Breakfast		
Snack		
Lunch		
Snack		
Dinner		
Snack/Dessert		

SECTION 10

Grains and Beans Cooking Chart

Below are grains and beans cooking charts, as well as some additional instructions on how to prepare these savory whole foods. Everything in the list is healthy, and you can add them in to your diet to add some variety to the menus in *UltraMetabolism*.

BEANS COOKING CHART

The following is reprinted with the permission of Zel and Reuben Allen.

Vegetarians in Paradise

<http://www.vegparadise.com>

Begin by washing beans and discarding any that are discolored or badly formed. Check for debris in the package, such as small rocks or twigs, and discard anything inedible. Beans cook more quickly and their digestibility benefits with soaking in water. To do this, cover with about 3 inches of water and soak for eight hours or overnight. Discard the soak water and cook the beans in fresh water.

There are other factors that contribute to the length of cooking, such as the “hardness” of the water and how long the beans have been dried. For some of the longer-cooking beans we have found that soaking 24 hours and changing the soak water two or three times hastens the cooking time.

QUICK-SOAK METHOD: When time is limited, you can wash and pick over beans and put them into a stockpot with 3 inches of water covering the beans. Bring to a boil and boil for ten minutes to remove toxins. Then cover and allow to soak for one hour. Discard soak water, add fresh water, and cook until tender.

As a general rule of thumb, 1 cup of dried beans will yield about 2½-3 cups of cooked beans.

BEAN (1 cup dry)	CUPS WATER	COOK TIME	CUPS YIELD
Adzuki (Aduki)	4	45–55 min.	3
Anasazi	2½–3	45–55 min.	2¼
Black Beans	4	1–1½ hrs.	2¼
Black-eyed Peas	3	1 hr.	2
Cannellini (White Kidney Beans)	3	45 min.	2½
Cranberry Bean	3	40–45 min.	3
Fava Beans, skins removed	3	40–50 min.	1 2/3
Garbanzos (Chickpeas)	4	1–3 hrs.	2
Great Northern Beans	3½	1½ hrs.	2 2/3
Green Split Peas	4	45 min.	2
Yellow Split Peas	4	1–1½ hrs.	2
Green Peas, whole	6	1–2 hrs.	2
Kidney Beans	3	1 hr.	2¼
Lentils, brown	2¼	45 min.–1 hr.	2¼
Lentils, green	2	30–45 min.	2
Lentils, red	3	20–30 min.	2–2½
Lima Beans, large	4	45 min.–1 hr.	2
Lima Beans, small	4	50–60 min.	3
Lima Beans, Christmas	4	1 hr.	2
Mung Beans	2½	1 hr.	2
Navy Beans	3	45–60 min.	2 2/3
Pink Beans	3	50–60 min.	2¾
Pinto Beans	3	1½ hrs.	2 2/3
Soybeans	4	3–4 hrs	3

GRAIN COOKING CHART

GRAIN (1 cup dry)	CUPS WATER	COOK TIME	CUPS YIELD
Amaranth	2½	20–25 min.	2½
Barley, pearled	3	50–60 min.	3½
Barley, hulled	3	1 hr. 15 min.	3½
Barley, flakes	2	30–40 min.	2½
Buckwheat Groats*	2	15 min.	2½
Cornmeal (fine grind)	4–4½	8–10 min.	2½
Cornmeal (polenta, coarse)	4–4½	20–25 min.	2½
Millet, hulled	3–4	20–25 min.	3½
Oat Groats	3	30–40 min.	3½
Oat, bran	2½	5 min.	2
Quinoa **	2	15–20 min.	2¾
Rice, brown basmati	2½	35–40 min.	3
Rice, brown, long-grain	2½	45–55 min.	3
Rice, brown, short-grain***	2–2½	45–55 min.	3
Rice, brown, quick	1¼	10 min.	2
Rice, wild	3	50–60 min.	4
Rye, berries	3–4	1 hr.	3
Rye, flakes	2	10–15 min.	3
Spelt	3–4	40–50 min.	2½
Teff ****	3	5–20 min.	3½
Triticale	3	1 hr. 45 min.	2½
Wheat, whole berries	3	2 hrs.	2½

GRAIN (1 cup dry)	CUPS WATER	COOK TIME	CUPS YIELD
Wheat, couscous	1	5 min.	2
Wheat, cracked	2	20–25 min.	2¼
Wheat, bulgur *****	2	15 min.	2½

- * Buckwheat groats are available toasted and untoasted. Cooking times are the same.
- ** Quinoa should be well rinsed in a fine strainer for two to three minutes to remove the saponins (a natural protective coating that will give a bitter flavor if not rinsed off).
- *** Short-grain brown rice is sometimes labeled sweet, glutinous, or sticky brown rice.
- **** Teff can be enjoyed raw as well as cooked. Sprinkle it on salads or over cooked cereals to increase fiber and nutrition.
- ***** Bulgur wheat can be soaked in one inch of warm water for one hour and used in raw salads.

SECTION 11

A Glossary of Useful Terms in the *UltraMetabolism* World

Adipocyte: A fat cell, important for storing energy in the form of fat, controlling the mobilization or retention of fat in response to hormonal stimulation, modulating inflammation, and maintaining proper energy balance in the body.

Adiponectin: A hormone produced by fat cells that regulates the metabolism of fats and glucose and improves the body's response to insulin and blood sugar. Adiponectin also has anti-inflammatory effects on the cells lining the walls of blood vessels. While high blood levels of this hormone are associated with a reduced risk of heart attack, low levels are found in people who are obese.

Antioxidant: A chemical that neutralizes free radicals to defend the body's cells from damage. The metabolic processes that produce antioxidants are controlled and influenced by an individual's genetic makeup and the extra-environmental factors (such as diet, smoking, and pollution) to which the body is exposed. While the body is able to make its own antioxidants, internal production is insufficient to neutralize and scavenge all free radicals. Obtaining antioxidants in a wide variety of foods, such as colorful fruits and vegetables, bolsters the body's defenses. Dietary antioxidants include vitamin E, beta-carotene, vitamin C, the trace mineral selenium, and a whole array of powerful phytonutrients such as polyphenols found in chocolate, proanthocyanidins found in berries, and catechins found in green tea.

Arginine: An amino acid that performs numerous vital functions, including wound healing and secretion of key hormones such as insulin and glucagon. Arginine is readily obtained through a wide range of foods, including meats, poultry, fish, dairy products, and nuts. However,

supplementation has been shown to be effective in reducing mildly elevated blood pressure (by enhancing the synthesis of nitric oxide or “NO” to dilate vessel walls and improve blood flow around the heart), and perhaps in inhibiting atherosclerosis and lowering cholesterol.

ATP: Adenosine triphosphate is the energy-carrying molecule found in the cells of all living things. It is the body’s gasoline, or fuel. ATP captures chemical energy obtained from the breakdown of food molecules and releases it to fuel other cellular processes. Additionally, when needed, it converts energy from storage molecules and serves as a shuttle, delivering the energy to places within the cell where energy-consuming activities are taking place. ATP either directly or indirectly delivers energy to almost all metabolic pathways.

L-Carnitine: An amino acid derivative synthesized in the liver and kidneys and first isolated from meat (*carnus* is Latin for “flesh”). It plays an important role in energy production, primarily by shuttling activated fatty acids (acyl-CoA) into the mitochondria for metabolism and is a conditionally essential nutrient (meaning that under certain conditions, the demand for L-carnitine may exceed an individual’s capacity to synthesize it).

Catalase: One of our own antioxidant enzymes that facilitates the decomposition of toxic waste products of metabolism, such as hydrogen peroxide, to harmless water and oxygen.

Cortisol: A hormone secreted by the adrenal glands in response to any kind of physical or psychological stress. Excesses or deficiencies of this hormone are also implicated in various physical symptoms and disease states.

Cytokines: Messenger molecules or proteins of our immune system that help regulate the immune response. They can be inflammatory or anti-inflammatory.

Free Radical: Molecules (also called reactive oxygen species or ROS) with unpaired electrons that are formed when oxygen interacts with certain molecules. Once formed, these highly reactive radicals start a chain reaction, like dominoes falling, causing damage when they react with cellular components such as DNA or the cell membrane. Cells may function poorly or die if this occurs. Antioxidants, both manufactured in the body and supplied by a diet rich in fruits and vegetables, prevent free radical damage in the body by safely interacting with free radicals and terminating the chain reaction before damage occurs.

Functional Medicine: Science-based health care practice that takes an individual approach in assessing and treating underlying causes of illness through therapies that restore health and improve function. The central aims of functional medicine are to 1) promote health, 2) predict and prevent disease, and 3) cure existing disease by improving physiologic function.

Gene: Basic biological unit of heredity.

Genetics: The study of inheritance.

Genomics: The study of genes, their resulting proteins, and the role played by the proteins in the body's biochemical processes.

Glutathione: A small protein involved in detoxification—it binds to toxins, such as heavy metals and pesticides, and packages them for excretion. Glutathione is also an important antioxidant and has shown promise as an anticancer agent. It is one of the body's most important antioxidants and detoxifiers.

Glycemic Load (GL): Determined by multiplying its glycemic index by its available carbohydrate content per serving. This system was developed by scientists to simultaneously describe the **quality** (glycemic index) and **quantity** of carbohydrate in a meal or diet.

Glycemic Index (GI): A measurement of the relative glycemic response (rise in blood sugar) to dietary carbohydrates. Some carbohydrates trigger rapid responses in blood sugar, while for others the response is blunted. All carbohydrates can be assigned a GI value. The higher the number on the GI scale, the more rapid the response or rise in blood sugar.

Grehlin: A hormone secreted in the stomach that stimulates hunger.

Insulin: A hormone secreted from the pancreas, insulin regulates carbohydrate metabolism, the level of sugar or glucose in the blood, and fat and protein storage. Its function is much greater than the original notion that it opened the gates on the cell to allow glucose to enter.

Glutathione Peroxidase: An enzyme that functions as a powerful antioxidant and helps prevent disease-associated lipid peroxidation of cell membranes by consuming free peroxide in the cell. It requires selenium to function properly. Low levels have been linked to heart attacks, among other age-related diseases.

Inflammation: Part of the body's natural defense system against infection or irritation, characterized by a stereotyped cascade of events in which the body's white blood cells and specific chemicals ward off foreign substances or the onset of infection, and then retreat to their original levels. If irritation continues, however, chronic inflammation ensues and can eventually overwhelm an organism, causing the inflammation to become systemic, involving many organ systems and disrupting proper functioning. While the inflammatory process can be protective, it can also go awry, not only in individuals with inflammatory diseases like arthritis but in otherwise healthy individuals whose lifestyles and/or environments expose them to substances the body perceives as irritants, such as cigarette smoke or chemical food additives. Likewise, it can be obvious, such as when an injured area becomes swollen, or can occur much more quietly and insidiously. It is also emerging as a major cause of heart disease, diabetes, cancer, Alzheimer's disease, obesity, and aging in general.

Interleukin-1 beta (IL-1b): A cytokine that is produced by activated macrophages (white blood cells) and functions as an important mediator of the inflammatory response. It is involved in a variety of cellular activities, including cell proliferation, differentiation, and apoptosis (cell

death). The production of cyclooxygenase-2 (PTGS2/COX2) by this cytokine in the central nervous system contributes to inflammation and pain hypersensitivity.

Interleukin-6 (IL-6): Also referred to as B-cell stimulatory factor-2 (BSF-2) and interferon b-2, a cytokine involved in a wide variety of biological functions, including development and possibly in neurodegenerative processes. It is one of the key inflammatory cytokines produced by fat cells or adipocytes.

Leptin: A hormone secreted primarily by fat cells that appears to play an important role in long-term regulation of body weight and body fat percentage. In some studies, weight loss has been demonstrated after leptin administration through a decrease in hunger and food consumption and increasing energy expenditure. Leptin also plays a role in reproductive function and disease states.

Macrophage: An immune cell found all over our body. Macrophages act as scavengers that engulf dead cells, foreign substances, and other debris.

Metabolic Syndrome: Also known prediabetes, this is a group of metabolic disorders that stems primarily from the disorder of insulin resistance. Insulin resistance occurs when the body's tissues do not respond normally to the hormone insulin. As a result, insulin levels become elevated in the body's attempt to overcome the resistance. Elevated insulin levels lead, directly or indirectly, to the other metabolic abnormalities, which include hypertension, low HDL (good) cholesterol, high LDL (bad) cholesterol, high triglycerides, obesity (especially central obesity), inflammation, and abnormal blood clotting. Individuals with such symptoms are at increased risk of coronary heart disease, as well as other diseases related to plaque buildups in artery walls (such as stroke and peripheral vascular disease). The more factors present, the greater the risk, although the presence of three or more symptoms is usually required for diagnosis. Causes of metabolic syndrome include physical inactivity and genetic factors, particularly family history of type 2 diabetes.

Mitochondria: Organelles that function as the powerhouse of each cell, converting energy into its usable form and allowing the maintenance of normal body function and metabolism. The number of mitochondria contained in each cell depends on the cell's metabolic activity: the more activity, the more mitochondria. Each mitochondrion contains its own DNA, which is passed down intact from each organism's mother.

αMSH: Alpha melanocyte-stimulating hormone, a naturally occurring molecule produced in the pituitary that modulates appetite and inflammatory and immune responses.

Nitric Oxide (NO): An important signaling molecule that acts in many tissues to regulate a diverse range of physiological processes, including immune and nervous system regulation, inflammatory response, smooth muscle relaxation, pregnancy, and blood vessel formation.

NFκB: NFκB is a transcriptional factor involved in the transcriptional activation of genes that regulate different cellular processes. It turns on genes that regulate inflammation and is controlled in part by oxidative stress in the body.

Nutrigenomics: The study of how nutrition affects health by altering the expression and/or structure of an individual's genetic makeup. Research in this area focuses on the degree to which diet influences the balance between healthy and disease states and how diet-regulated genes play a role in the onset, progression, and severity of chronic diseases. It is thought that developments in this field may soon lead to "personalized nutrition," or dietary prescriptions based on knowledge of nutritional requirement, nutritional status, and personal genetic makeup to effectively prevent or cure chronic disease.

Organic Acids: Organic acids are metabolic intermediates produced in pathways of central energy production, detoxification, neurotransmitter breakdown, or intestinal microbial activity. Accumulation of specific organic acids in urine often signals a metabolic inhibition or block. This may be due to a nutrient deficiency, an inherited enzyme deficit, toxic buildup, or drug effect.

From a single urine specimen, organic acid analysis can reveal important information in these areas:

- Vitamin and mineral insufficiencies
- Amino acid insufficiencies like carnitine and NAC
- Oxidative damage and antioxidant sufficiency markers
- Indicators to assess detoxification sufficiency
- The best functional markers of B-complex deficiency
- Neurotransmitter metabolites to assess CNS function
- Mitochondrial energy production assessment via citric acid cycle components
- Methylation sufficiency status (folate, B12, B6)
- Lipoic acid and CoQ10 sufficiency markers
- Specific dysbiosis markers for bacterial and yeast overgrowth

Oxidative stress: Occurs when the body's natural defense system becomes overwhelmed and fails to compensate for and quell the damaging free radical production that occurs as a byproduct of energy production in cells (or is introduced by environmental factors such as cigarette smoke, pollution, infection, or obesity). Damage to proteins, membranes, and genes occurs during this state and has been implicated in the cause of certain diseases and acceleration of the

body's aging process. Oxidative stress may be ameliorated through antioxidants in the diet and by supplements.

PGC-1 α : Peroxisome proliferator-activated receptor gamma coactivator-1 alpha (PGC-1a) is a key regulator of mitochondrial energy metabolism, but also plays a more general role in energy homeostasis. Inappropriate increases in PGC-1a activity have been linked to a number of disease states, including heart failure and diabetes.

Phytonutrient Index (PI): Phytonutrients derived from diverse foods presumably can interact additively and (possibly) synergistically; thus the total dietary load of phytonutrients may have important implications for health. As a means of very roughly quantifying this load, a "phytonutrient index" (PI) is proposed, defined as the percent of dietary calories derived from foods rich in phytonutrients. Calories derived from fruits, vegetables (excluding potatoes), legumes, whole grains, nuts, seeds, fruit/vegetable juices, soy products, wine, beer, and cider—and foods compounded therefrom—would be counted in this index. Partial credit could be given for antioxidant-rich extra-virgin olive oil. Other added oils, refined sugars, refined grains, potato products, hard liquors, and animal products—regrettably, the chief sources of calories in typical Western diets—would be excluded.

Polymorphism: Gene variations or differences in DNA sequence that govern disease risk and biologic function among individuals.

Polyphenols: A class of phytonutrients, they are among the most powerful plant antioxidants and have been associated with prevention of heart disease and cancer. Phenolic compounds are responsible for the brightly colored pigments of many fruits and vegetables. One of the more nutritionally important classes of polyphenols, the flavonoids, is widely distributed in plant foods and includes lignins (nuts, whole-grain cereals), proanthocyanins (grapes, pine bark), anthocyanins/anthocyanidins (brightly colored fruits and vegetables, berries), isoflavones (soybeans), catechins (tea, grapes, wine), tannins (tea, nuts), and quercetin (grapes, wine, onions)

PPAR: A class of receptors on the nucleus of cells that regulates metabolism insulin sensitivity and inflammation through its effect on gene transcription.

Probiotics: Bacteria such as *Lactobacillus acidophilus* and *Lactobacillus casei* help to balance the intestinal microflora, inhibit the growth of harmful bacteria, promote good digestion, boost immune function, and increase resistance to infections. Such beneficial bacteria are found in fermented dairy products, such as live culture yogurt (however, different brands of yogurt can vary greatly in their bacterial content and potency and some [particularly frozen] yogurts do not contain any live bacteria). Probiotics may also be taken in supplement form.

PYY: A hormone released by cells in the intestine after meals; it inhibits eating and increases with the number of calories ingested.

Reactive Oxygen Species (ROS): Also called free radicals, strong oxidants that cause damage to other molecules and cell structures, they are constantly formed in the body and are removed by antioxidant defenses. At low levels, these species may function in cell signaling processes; however, at higher levels, they may damage cells.

Resistin: A hormone that is produced in the fat cells or adipocytes and is often found to be elevated in people with diabetes and obesity. Higher levels of resistin are also associated with insulin resistance and inflammatory disease.

Sarcopenia: The age-related loss of muscle tissue that appears to begin in the fourth decade of life and accelerates after the age of approximately 75 years. Physical inactivity is seen as a primary contributing factor, although current research suggests that it is a multifactorial process. Sarcopenia is preventable and partly reversible with appropriate exercise interventions, including resistance training (or lifting weights).

Superoxide Dismutase: An enzyme that functions as an important antioxidant in the body as it facilitates the decomposition of superoxide (a free radical implicated in mechanisms of aging and the disease-associated peroxidation of lipids) into oxygen and hydrogen peroxide.

Transcription Factor: A protein that binds with DNA and regulates the beginning of the process that ultimately leads to the translation of the genetic code into a functional protein.

Tumor necrosis factor-alpha (TNF- α) An inflammatory protein that serves a variety of functions in the body. Beneficial functions of TNF- α include its role in the immune response to bacterial and certain fungal, viral, and parasitic invasions; regulation of local inflammatory responses; and in the destruction of specific tumors. It is a complex cytokine, however, in that it also exhibits detrimental effects such as the promotion of growth in some types of tumor cells and participation in inflammatory disorders. High levels of TNF- α correlate with increased risk of disease.

VO₂ Max: A measure of fitness assessed by the volume of oxygen (in milliliters) one can use in one minute, per kilogram of body weight, while exercising at maximum capacity. Those who are more fit have higher VO₂ Max values and can exercise more intensely than those who are not as well conditioned. Numerous studies show that VO₂ Max may be improved through regular moderate-to-high-intensity exercise and that low levels are associated with an increased risk of death. The higher the VO₂ Max, the more calories can be burned per minute. People who burn at 60 percent of their predicted VO₂ Max based on their age, sex, height, and weight burn 40 percent **fewer** calories than they should. Those who burn 110 percent of their VO₂ Max burn 10 percent **more** calories than expected. In other words, the more oxygen you can burn per minute, the more calories you can burn per minute.

SECTION 12

Additional *UltraMetabolism* Resources Listed by Topic

(See www.ultrametabolism.com for more resources)

Finding a Doctor

The Institute of Functional Medicine

www.functionalmedicine.org

The Institute of Functional Medicine trains physicians in the basic paradigm of how to deal with chronic complex diseases by understanding their causes, and how to improve and enhance function in the body. The Textbook of Functional Medicine is a great resource for your physicians. I authored two chapters in the textbook, one on biochemical individuality and genetic uniqueness, and the other on dietary influences on health.

Activating the Relaxation Response

There are many wonderful resources available to help you activate the relaxation response and reduce stress. Below is a selection of some of the best sources for CDs, lifestyle products such as biofeedback tools, and saunas.

Health Journeys

www.healthjourneys.com

Resources for self-healing, including guided-imagery tapes

Natural Journeys

www.naturaljourneys.com

Healthy lifestyle DVDs and videos, including Pilates, yoga, tai chi, fitness, meditation and self-healing

The Relaxation Company

www.therelaxationcompany.com

Music and relaxation CDs

Neuroacoustic

www.neuroacoustic.com

Relaxation tapes and CDs

Monroe Products

www.Hemi-Sync.com

Music and relaxation tapes and CDs

Tapes and Resources for Yoga, Breathing, and Meditation

Padma Media: Products That Support an Awakened Life

www.padmamedia.com

Bliss in a Box

Susan Piver

Kripalu Gentle Yoga Kit

Stephen Cope

8 Meditations for Optimum Health

Andrew Weil

Sound Body, Sound Mind

Andrew Weil

Tools for Healthy Living and Relaxation

Resperate

www.resperate.com

A personal small biofeedback device to train yourself to relax

Sunlight Saunas—Source of Far-infrared Saunas

www.sunlightsaunas.com

Pangea Organics

www.pangeaorganics.com

Organic personal care products

Mail-Order Organic Food Products

These Web sites have “multiple” food products, including fresh and frozen produce and pantry items that can supply most of your needs.

Note: Food products and ingredients change periodically; reading the label is a must even with the best of resource lists!

Diamond Organics

www.diamondorganics.com

Mail-order high-quality organic produce and other raw foods

The Organic Food Pages

www.theorganicpages.com

Directory of mail-order organic foods and personal care products

Shop by Organic

www.shopbyorganic.com

A vast array of organic food products

Organics

www.organic.com

Shop online organic food products

The Green Guide

www.thegreenguide.com

*Information on environmental health issues
Information on mail ordering organic foods*

Organic Valley

www.organicvalley.coop

Organic food directory from a large cooperative of family-owned farms

Miss Roben

www.missroben.com

Food allergy shopping made easy

EfoodPantry.com

www.efoodpantry.com

1-866-epantry

A variety of organic food products

Morningside Farm

www.morningsidefarm.com

A complete selection of natural and organic foods

Organic Provisions

www.orgfood.com

A natural foods and products store

Cherry Moon Farms

www.cherrymoonfarms.com

1-888-378-2758

Organic fruit, snacks, and gift baskets

Organic Planet

www.organic-planet.com

Organic foods such as nuts, seeds, dried fruits, and specialty grains

Sno Pac Foods

www.snopac.com

Mail-order organic frozen vegetables and fruits

Sun Organic Farm

www.sunorganicfarm.com

1-888-269-9888

Mail-order organic food products

Vegan Essentials

www.veganessentials.com

A variety of organic vegan items, including food bars and snacks

Poultry, Eggs, Meat, Wild Game, and Dairy Products

Bell and Evans

www.bellandevans.com

All-natural fresh and frozen poultry items

Blackwing Meats, Inc.

www.blackwing.com

Wild game and organic poultry, including dried jerky snacks

Niman Ranch

www.nimanranch.com

A great source of organic animal products

B.C. Natural Foods

www.colemannatural.com

Premium natural and organic meats

Applegate Farms

www.applegatefarms.com

Produces natural and organic meats and assorted frozen food items

Eberly Poultry Farms

www.eberlypoultry.com

Certified organic poultry

Fage Products

www.fageusa.com

Authentic Greek yogurt and Greek food products

Meyer Natural Angus

www.meyernaturalangus.com

"Certified Humane Raised and Handled" natural Angus beef with no hormones and antibiotics

Murray's Chicken

www.murrayschicken.com

"Certified Humane Raised and Handled" antibiotic-free chicken

Organic Valley

www.organicvalley.com

Organic meats, dairy, eggs, juice, and produce from over 600 member-owned farms across the country

Peter and Gerry's Organic Eggs

www.peteandgerrys.com

Organic omega-3 and cage-free omega-3 eggs

Plainville Farms

www.plainvillefarms.com

Antibiotic-free turkey and deli items

Raised Right Poultry

www.raisedright.com

Organic chickens fed an all-vegetable diet

Shelton's Poultry

www.sheltons.com

Organic poultry products

Springfield Creamery/Nancy's Yogurt

www.nancysyogurt.com

Cultured dairy and soy yogurts

Stonyfield Farm

www.stonyfieldfarm.com

Organic dairy and soy yogurt

Produce

Brassica Protection Products, LLC

www.brassica.com

Brassica products, including sprouts and tea, developed by scientists at Johns Hopkins Medical School

Cascadian Farms

www.cfarm.com

Frozen organic vegetables and fruits

Christopher Ranch

www.christopher-ranch.com

Ready-to-use garlic products

Muir Glen

www.cfarm.com

Organic tomatoes and tomato products

Wyman's

www.wymans.com

Wild blueberry and other fruit products

Nuts, Seeds, Natural Nut and Seed Butters, and Flaxseed Meal

Bob's Red Mill Natural Foods, Inc.

www.bobsredmill.com

Complete selection of stone-ground organic whole-grain products

Once Again Nut Butter

www.onceagainnutbutter.com

Organic nut and seed butters, nuts, and varietal honeys

Spectrum

www.spectrumorganics.com

Complete line of high-quality oils and flaxseed meal

Whole-Food Nut, Fruit, and Seed Bars

www.andi.com

www.thebodyecologydiet.com

Food Bars

Bio International Inc./Organic Food Bar, Inc.

www.organicfoodbar.com

Food bar made with organic ingredients

Lara Bars—Humm Foods

www.larabar.com

Vegan bar made with nuts, seeds, and dried fruit

Nutiva

www.nutiva.com

Organic hemp protein bars and other products

Peace Works

www.peaceworks.com

Fruit and nut snack bars and specialty foods

Perfect 10 Bars

www.perfect10bars.com

Whole-Grain and Sprouted-Grain Food Products

Alvarado St. Bakery

www.alvaradostbakery.com

A variety of organic sprouted-wheat breads, bagels, buns, tortillas, and pizza breads

Arrowhead Mills

www.arrowheadmills.com

Whole grains, whole-grain products, and flaxseed

Hodgson Mill, Inc.

www.hodgsonmill.com

Complete line of whole-grain food products

Food for Life

www.foodforlife.com

Organic sprouted-grain (flourless) cereals, breads, tortillas, and many other products

French Meadow Bakery

www.frenchmeadow.com

Organic sprouted-grain breads and bread products

Grainaissance

www.grainaissance.com

Organic brown rice mochi (Japanese rice snack) for breakfast, snack, or desert

Matter of Flax

www.matterofflax.com

Flourless flax crackers

Nature's Path Foods Inc.

www.naturespath.com

Variety of whole-grain food products including cereals, snack bars, and frozen food items

Pacific Bakery

www.pacificbakery.com

Organic wheat-alternative and yeast-free breads

Shiloh Farms

www.shilohfarms.com

Whole grains, whole-grain products

U.S. Mills

www.usmillsinc.com

Organic cereals (Erewhon and New Morning) including Uncle Sam brand

Gluten-Free Products

Celiac Kitchen

www.celiackitchen.com

Complete line of low-allergy and gluten-free products that can be searched by ingredients

Gluten-Free Diet Book

www.glutenfreediet.ca

Best book on gluten-free diets with brand-name products

Miss Roben's

www.missroben.com

Complete line of low-allergy and gluten-free products

Mrs. Leeper's Pasta

www.mrsleeperspasta.com

Wheat-free, gluten-free corn and rice pastas and dishes

Nu-World Amaranth, Inc

www.nuworldfoods.com

Gluten-free, nonallergenic, ready-to-eat cereals, snacks, and baking ingredients

Enjoy Life Foods

www.enjoylifefoods.com

Foods free of common allergens (NO wheat, gluten, dairy, soy, eggs, nuts, etc.)

Food for Life Baking Co.

www.food-for-life.com

Complete line of organic sprouted-grain, wheat-free, gluten-free, and yeast-free baked goods

Heartland's Finest

www.heartlandsfinest.com

Gluten-free product line, including dry bean flours

Juicers and Blenders

Champion Juicer by Plastaket Mfg, Inc.

www.championjuicer.com

Rated as one of the best juicers available

Vita-Mix Corp.

www.ultimateblender.com

High-performance blender for whole foods

Chocolate

Chocolate Springs

www.chocolatesprings.com

A wide range of high-quality chocolate items, including chocolate nibs

Dagoba Organic Chocolate

www.dagobachocolate.com

Premium organic chocolate products, including raw chocolate nibs

Green and Black's Organic Chocolate

www.greenandblacks.com

Organic fair trade chocolate products

Rapunzel Pure Organics

www.rapunzel.com

Organic food products, including chocolate, soups, baking ingredients, and more

Terra Nostra Organic

www.terranostra.us

Organic chocolate products

Beverages

Choice Organic Tea

www.choiceorganictea.com
Variety of organic teas

Numi Tea

www.numitea.com
Organic teas

Sanfaustino/CCW Holdings Inc.

www.sanfaustino.com
An effervescent mineral water imported from Italy

Fish and Seafood

Vital Choice

www.vitalchoice.com
Wild fish including salmon and sardines

Crown Prince Natural

www.crownprince.com
Wild-caught, sustainably harvested specialty canned seafood

Ecofish

www.ecofish.com
Environmentally sustainable seafood

Omega Foods

www.omegafoods.net
Wild fish burgers that are dairy- and gluten-free

Sea Bear—Wild Salmon Jerky

www.seabear.com
Wild salmon jerky for snacks and “pack and go” food

Sea Vegetables

Maine Coast Sea Vegetables

www.seaveg.com
A wide variety of sea vegetables, including six organically certified types

Ocean Harvest Sea Vegetables

www.oceanharvest.com
A variety of sea vegetables

Spices and Seasonings

Diamond Organics

www.diamondorganics.com
Fresh herbs and spices

Frontier Natural Products Co-Op

www.frontiercoop.com
Organic spices and seasonings

Spice Hunter, The

www.spicehunter.com
Spices and seasoning blends

Beans

Mediterranean Delights

www.mediterraneandelights.com
Organic hummus and fruit spreads

Snacks and Such

Jungle, The

www.jungle-foods.com
Organic, raw vegetarian snacks including flax crackers

Mary's Gone Crackers

www.marysgonecrackers.com
Organic wheat-free, gluten-free crackers and baked goods

Dry Goods and Convenience Items

Applegate Farms

www.applegatefarms.com

Hormone- and antibiotic-free poultry and vegetarian jerky

Epicurean International/Thai Kitchen

www.thaikitchen.com

Thai foods including sauces, soups, and convenience meals

Fairfield Farm Kitchens/Moosewood

www.fairfieldfarmkitchens.com

Organic frozen food entrees, baked goods, and soups

Dr. McDougall's Right Foods

www.rightfoods.com

A variety of vegan products, including cereals and soups

Eden Foods

www.edenfoods.com

Organic food products including soups, condiments, whole grains, and entrees

Edward and Sons Trading Co.

www.edwardandsons.com

Innovative organic vegetarian grocery items

Hain Celestial Group, The

www.hain-celestial.com

A wide range of natural food products

Homegrown Naturals and Co.

www.homegrownnaturalfoods.com

Entrees, soups, and condiments

Imagine Foods

www.imaginefoods.com

Organic nondairy soups, broths, and other standard stock pantry items

Mediterranean Organic

www.mediterraneanorganic.com

Organic specialty foods such as artichokes, olives, capers, and fruit preserves

nSpired Natural Foods

www.nspiredfoods.com

Natural food brands such as Sunspire and Tropical Source (nondairy chocolate), Maranatha (natural nut butters), etc.

Near East

www.neareast.com

Grain- and bean-based convenience dishes

Pacific Foods of Oregon

www.pacificfoods.com

Soups, broths, and nondairy beverages

Seeds of Change

www.seedschange.com

Organic frozen entrees, sauces, dressings, and grain dishes

Tasty Bite

www.tastybite.com

Ready-to-eat authentic Indian meals

Trader Joe's

www.traderjoes.com

Natural food shopping with a variety of great convenience food items

Tree of Life

www.treeoflife.com

A wide range of organic food products

Whole Foods

www.wholefoods.com

Natural food shopping mecca with products from A-Z

Wild Oats

www.wildoats.com

Natural food shopping with a huge array of products and convenience items

Soy and Nondairy Alternatives

Imagine Foods

www.imaginefoods.com

Organic nondairy beverages, soups, and broths, and "Soy Dream" gluten-free non-dairy beverage

Lifeway Foods, Inc.

www.kefir.com

Probiotic dairy and soy beverages

Lightlife Foods

www.lightlife.com

Organic soy foods, including organic flax tempeh

Vitasoy USA

www.vitasoy-usa.com

Soy foods including Nasoya, Vitasoy, and Azumaya brands

Westbrae Westsoy

www.westbrae.com

Soy food products including gluten-free, unsweetened soymilk beverage

White Wave

www.SilkIsSoy.com

Makers of Silk soymilk and other soy food products (Silk soy beverages are gluten-free)

Whole Soy

www.wholesoycom.com

Organic cultured soy food products

Mori-Nu

www.morinu.com

Organic soy food products

Road's End Organics

www.chreese.com

Dairy-free, organic, vegan cheese alternatives

Turtle Island Foods

www.tofurky.com

Organic vegan soy food products

Juices

Kagome Inc.

www.kagome.us

One hundred percent vegetable and fruit blends

Lakewood Organic and Premium Juices

www.lakewoodjuices.com

Organic 100 percent fruit and vegetable juices

R. W. Knudsen Family

www.knudsenjuices.com

One hundred percent vegetable and fruit juices

Kitchen Tools

Williams-Sonoma

P.O. Box 7456

San Francisco, California 94120-7456

1-800-541-2233

www.williams-sonoma.com

Chefs Catalog

P.O. Box 650589

Dallas, TX. 75265-0589

1-800-967-3291

www.chefscatalog.com

Seafood Safety

Environmental Protection Agency

www.epa.gov/waterscience/fish/

Information on fish safety, including advisories

US FDA Center for Food Safety and Applied Nutrition

www.cfsan.fda.gov/seafood1.html

Information on fish safety, including advisories

Blue Ocean Institute

www.blueocean.org

Guide to ocean conservation

Aquaculture

www.aquaculture.co.il/index.htm

Information on the growing demand for aquaculture

Food Allergy

Food Allergy and Anaphylaxis Resource

www.foodallergy.org

Information on food allergies and resources for shopping and cooking

Organic Updates

Organic Trade Association

www.ota.org

Information source for issues pertaining to the organic industry