INTRODUCTION TO THE PALEOLITHIC DIET

Dr. Ben Balzer

There are races of people who are all slimmer, stronger and faster than we are. They all have straight teeth and perfect eyesight. Arthritis, diabetes, hypertension, heart disease, stroke, depression, schizophrenia and cancer are absolute rarities for them. These people are the last 84 tribes of hunter-gatherers in the world. They share a secret that is over 2 million years old. Their secret is their diet- a diet that has changed little from that of the first humans 2 million years ago, and their predecessors up to 7 million years ago. Theirs is the diet that man evolved on, the diet that is coded for in our genes. It has some major differences to the diet of "civilization". You are in for a few big surprises.

The diet is usually referred to as the "Paleolithic Diet" referring to the Paleolithic or Stone Age era. It is also referred to as the "Stone Age Diet", "Cave Man Diet" or the "Hunter-Gatherer Diet". More romantic souls like to think of it as the diet that was eaten in the "Garden of Eden" and they are correct in thinking so.

The basic principles of the Paleolithic Diet are so simple that most high school students can understand them. Within 15 minutes from now you will grasp the major elements. At the technical level, Paleolithic Diet Theory has a depth and breadth that is unmatched by all other dietary theories. Paleolithic Diet Theory presents a fully integrated, holistic, comprehensive dietary theory combining the best features of all other dietary theories, eliminating the worst features and simplifying it all.

All major dietary components are covered- (i.e. vitamins, fats, protein, fats, carbohydrates, antioxidants and phytosterols etc). This is for the simple reason that it is the only diet that is coded for in our genes- it contains only those foods that were "on the table" during our long evolution, and discards those which were not. Have you ever wondered why almost everybody feels the need to take vitamin supplementsat times, or why so many people feel the need to "detoxify" their system? There are very real reasons for this that you will soon understand. Now, come with me. I'd like to share the secret with you.....

Basics of the Paleolithic Diet

For millions of years, humans and their relatives have eaten meat, fish, fowl and the leaves, roots and fruits of many plants. One big obstacle to getting more calories from the environment is the fact that many plants are inedible. Grains, beans and

potatoes are full of energy but all are inedible in the raw state as they contain many toxins. There is no doubt about that- please don't try to eat them raw, they can make you very sick.

Around 10,000 years ago, an enormous breakthrough was made- a breakthrough that was to change the course of history and our diet forever. This breakthrough was the discovery that cooking these foods made them edible- the heat destroyed enough toxins to render them edible. Grains include wheat, corn, barley, rice, sorghum, millet and oats. Grain based foods also include products such as flour, bread, noodles and pasta. These foods entered the menu of New Stone Age (Neolithic) man, and Paleolithic diet buffs often refer to them as Neolithic foods.

The cooking of grains, beans and potatoes had an enormous effect on our food intake- perhaps doubling the number of calories that we could obtain from the plant foods in our environment. Other advantages were soon obvious with these foods:

· they could store for long periods (refrigeration of course being unavailable in those days)

· they were dense in calories- ie a small weight contains a lot of calories, enabling easy transport

· the food was also the seed of the plant- later allowing ready farming of the species

These advantages made it much easier to store and transport food. We could more easily store food for winter, and for nomads and travelers to carry supplies. Food storage also enabled surpluses to be stored, and this in turn made it possible to free some people from food gathering to become specialists in other activities, such as builders, warriors and rulers. This in turn set us on the course to modern day civilization. Despite these advantages, our genes were never developed with grains, beans and potatoes and were not in tune with them, and still are not. Man soon improved further on these advances- by farming plants and animals.

Instead of being able to eat only a fraction of the animal and plant life in an area, farming allows us to fill a particular area with a large number of edible plants and animals. This in turn increases the number of calories that we can obtain from an area by some 10 to 100 fold or more. Then followed the harnessing of dairy products, which allowed man to obtain far more calories from the animal over its lifetime than if it were simply slaughtered for meat. Dairy products are interesting as they combine a variety of components- some of which our genes were ready for and some not. While cow's milk is ideal for calves, there are several very important differences between it and human milk. For example, the brain of a calf is only a

tiny fraction of its body weight whereas humans have very big brains. Not surprisingly, cow's milk is low in critical nutrients for brain development, particularly omega-3 fats.

Paleolithic Diet buffs refer to the new foods as Neolithic foods and the old as Paleolithic Diet foods. In simple terms we see Neolithic as bad and Paleolithic as good. Since then, some other substances have entered the diet- particularly salt and sugar, and more recently a litany of chemicals including firstly caffeine then all other additives, colorings, preservatives, pesticides etc.

Grains, Beans and Potatoes (GBP) share the following important characteristics:

· They are all toxic when raw. There is no doubt about this- it is a fact that no competent source would dispute- they can be extremely dangerous and it is important never to eat them raw or undercooked. These toxins include enzyme blockers, lectins and other types. I will talk about them in detail later as they are very important.

· Cooking destroys most but not all of the toxins. Insufficient cooking can lead to sickness such as acute gastroenteritis.

· They are all rich sources of carbohydrate, and once cooked this is often rapidly digestible-giving a high glycemic index (sugar spike).

· They are extremely poor sources of vitamins (particularly vitamins A, B-group, folic acid and C), minerals, antioxidants and phytosterols.

Therefore diets high in grains beans and potatoes (GBP):

· Contain toxins in small amounts

· Have a high glycemic index (ie have a similar effect to raw sugar on blood glucose levels)

· Are low in many vitamins, minerals, antioxidants and phytosterols- ie they are the original "empty calories"

· Have problems caused by the GBP displacing other foods

As grains, beans and potatoes form such a large proportion of the modern diet, you can now understand why it is so common for people to feel they need supplements or that they need to detoxify (ie that they have toxins in their system)- indeed both feelings are absolutely correct. Unfortunately, we don't necessarily realize which supplements we need, and ironically when people go on detoxification diets they unfortunately often consume even more Neolithic foods (e.g soybeans) and

therefore more toxins than usual (perhaps they sometimes benefit from a change in toxins). More detail on these issues follows in subsequent pages.

The Essentials of the Paleolithic Diet

Eat none of the following:

· Grains- including bread, pasta, noodles

· Beans- including string beans, kidney beans, lentils, peanuts, snowpeas and peas

· Potatoes

· Dairy products

· Sugar

· Salt

Eat the following:

· Meat, chicken and fish

· Eggs

· Fruit

· Vegetables (especially root vegetables, but definitely not including potatoes or sweet potatoes)

· Nuts, eg. walnuts, Brazil nuts, macadamias, almonds. Do not eat peanuts (a bean) or cashews (a family of their own)

· Berries- strawberries, blueberries, raspberries etc.

Try to increase your intake of:

· Root vegetables- carrots, turnips, parsnips, rutabagas, Swedes

· Organ meats- liver and kidneys (I accept that many people find these unpalatable and won't eat them)

Expect some minor tuning problems- don't worry, you can deal with them:

· It will take some time for your body to adjust to the changes after all these years. There is a huge surge in your vitamin intake. There is a huge decrease in your toxin intake.

· Start with breakfast for few days, as this is the easiest place to start as most people eat it at home, and it tends to be the least Paleolithic meal of the standard three. For weight loss you will eventually need to reduce your carbohydrate intake, but ignore this initially as most people have high carb intakes and this can continue for the first few days that you are on this diet. If you reduce too quickly then you may feel unwell. Then move on to lunch or dinner for a few days and then to all three meals. If you work, you will often find it easier to take your lunch to work.

· Keep reading more about the diet- and read it again. Remember, there are many dietary myths that will need to be unlearned. Particularly, please read the section on fats several times. Knowledge on fats has exploded over the last decade and there is a realization in mainstream nutrition that omega-3 fats are critical to good health. It is very important to ensure that you have an adequate intake of these. The lowfat diet craze of the 90s was well intentioned but many people "threw out the baby with the bathwater"- most people reduced omega-3 fat intake as well as other fats, and sometimes even increased omega-6 fats. There is now a realization that the low fat diet theory of the 90s doesn't often work (it has about a 6% success rate like most other diets) and that the vast majority of the Western population need to increase their omega-3 intake and decrease their omega-6 intake. Even if you don't end up on a Paleolithic Diet, you will benefit from a better appreciation of fats.

Technical Aspects

12,000 years ago the ice planet Earth thawed out as the last Ice Age came to an end. The great glaciers melted, carving enormous plains across the continents and the planet became green again. The seas rose some 400 feet (incidentally and unfortunately drowning most of our archeological heritage). The plains flourished and savannah, prairie and forest sprang up. Grazing animals spread onto the plains, followed by hunting animals and amongst these last were the greatest hunters of all- humans. Humans, being omnivores, have the ability to eat both plant and animal foods. That is a major advantage as the number of creatures that can live in a particular habitat depends entirely on how much energy they can obtain. To make a crude example- imagine you are breeding monkeys on 100 acres of land and the only edible plant there is bananas. If you double the number of banana plants, then you can double the number of monkeys on the land.

You might instead introduce apple trees and have the same effect. The number of monkeys would depend entirely on how many calories they could obtain from the environment. The carrying capacity of the habitat for a species depends on how many calories the species can obtain. Humans are no different. They have a major advantage in being able to eat both plant and animals foods thereby harvesting

enormous amounts of calories from the environment. Humans learned to cook grains, beans and potatoes and increased further the number of plant food calories they can obtain from the environment- probably doubling it in most habitats, and even more on grasslands.

The reason why grains, beans and potatoes store so well is simply because of the toxins that they contain. The enzyme blockers put them into a deep freeze, stopping them from sprouting. The lectins and other toxins are natural pesticides and can attack bacteria, insects, worms, rodents and other pests (and humans too of course).

ANTINUTRIENTS- YOUR KEY TO BAD HEALTH

You probably already know a lot about nutrients- macronutrients (fats, protein and carbohydrates and micronutrients (vitamins, minerals, antioxidants, phytosterols etc). Now it's time to meet the rest of the family. We all know that foods contain a variety of nutrients. There is less awareness that many foods contain small amounts of potentially harmful substances. These are toxins, as they have toxic effects. They are normally called "antinutrients" by the scientific community as toxins sounds too alarmist. Antinutrients are very real and for over 100 years research has been done on them- but it is generally only appreciated by a small group of specialized scientists. Antinutrients have an incredible range of biological effects. As you have probably already guessed, the vast majority and highest levels of antinutrients are in Neolithic foods like grains, beans and potatoes. The Paleolithic diet has incredibly low levels of antinutrients compared to the usual modern diet. I believe that this is the number one advantage of the diet.

Textbooks on antinutrients read like books on what not to eat. Neolithic foods are the most prominent. Professor Irvin Liener published one of the most famous of these books in 1980. In the first chapter he points out that when we started cooking inedible plants, new toxins entered the diet for the first time. Ironically, he wasn't trying to promote Paleolithic diets- his aim was to help agricultural scientists more safely feed the world on grains, beans and potatoes.

It's a technical subject, and I'll do my best to make it clear to you.

Consider our friend, the apple. When an animal eats an apple, it profits by getting a meal. It swallows the seeds and then deposits them in a pile of dung. With some luck a new apple tree might grow, and so the apple tree has also profited from the arrangement. In nature as in finance, it is good business when both parties make profit happily. Consider what would happen if the animal were greedy and decided to eat the few extra calories contained within the apple seeds- then there would be

no new apple tree to continue on the good work. So, to stop this from happening, the apple seeds contain toxins that have multiple effects:

* firstly, they taste bad- discouraging the animal from chewing them

* secondly some toxins are enzyme blockers that bind up predators' digestive enzymes- these also act as "preservatives" freezing the apple seed enzymes until sprouting- Upon sprouting of the seed, many of these enzyme blockers disappear.

* thirdly, they contain lectins- these are toxic proteins which have numerous effects. They act as natural pesticides and are also toxic to a range of other species including bacteria, insects, worms, rodents and other predators including humans .

Of course, the apple has other defenses- to start with it is high above the ground well out of reach of casual predators, and it also has the skin and flesh of the apple to be penetrated first. Above all though is the need to stop the seed from being eaten, so that new apple trees may grow.

Now, please consider the humble grain. Once again as a seed its duty is mission critical- it must perpetuate the life cycle of the plant. It is however much closer to the ground, on the tip of a grass stalk. It is within easy reach of any predator strolling by. It contains a good source of energy, like a booster rocket for the new plant as it grows. The grain is full of energy and in a vulnerable position. It was "expensive" for the plant to produce. It is an attractive meal. Its shell offers little protection. Therefore, it has been loaded with toxic proteins to discourage predators- grains are full of enzyme blockers and lectins. You may be surprised to learn that uncooked flour is very toxic- please don't try eating it as you become very sick. And no, I don't recommend al dente pasta (if one must eat pasta at all).

Beans too are full of enzyme blockers and lectins. Potatoes contain enzyme blockers, lectins and another family of toxins called glycoalkaloids. Glycoalkaloids (GA) unlike lectins and enzyme blockers aren't destroyed by cooking, even deep-frying. GA are particularly high in green or injured potatoes, which must never be eaten even if trimmed heavily and well-cooked. Many people have told me that they eat small amounts of raw potato- this is a dangerous habit and it should be discouraged very strongly.

These toxins in foods are commonly referred to as antinutrients. Let's learn some more about them:

Enzyme Blockers: These enzyme blockers are abundant in all seeds including grains and beans, and also in potatoes, serving to hold them in suspended animation and also acting as pesticides. Most commonly they block the enzymes that digest

protein (proteases), and are called "protease inhibitors". They can affect the stomach protease enzyme "pepsin", and the small intestine protease enzymes "trypsin" and "chymotrypsin". These small intestine enzymes are made by the pancreas (it does a lot of other important things besides making insulin). Some enzyme blockers affect the enzymes that digest starch (amylase) and are called "amylase inhibitors".

When GBP are cooked, most of the enzyme blockers are destroyed, but some are not. In human volunteers and in animal experiments high levels of protease inhibitors lead to increased secretion of digestive enzymes by the pancreas. This is because the body can sense that the enzymes have been knocked out and orders to pancreas to make more. Even if the effect of GBP based foods is only a small increase in pancreatic enzyme secretion, over many years it all adds up to a lot of extra work.

They are effective poisons- rats cannot gain weight if they have substantial amounts of enzyme blockers in the diet. As far as their preservative action is concerned, I need only to remind you that the potted grains in the tombs of the Egyptian pharaohs were still viable and sprouted after thousands of years locked away.

Grain eating birds have evolved digestive enzymes that are resistant to grain protease inhibitors. Lectins (Haemagglutins)..... Meet Hannibal!

Lectins are natural proteins that have a large variety of roles. They are amongst the most fascinating and stimulating of all biological compounds; and I have no doubt that they play a major role in many "unexplained " diseases. I think of them as "Hannibal Lectins" as they remind of the devious criminal mastermind in the shock horror movie "Silence of the Lambs." Lectins are like master code-breakers. The cells of our bodies are studded with receptors which are like code pads to ensure stimulation only under the correct circumstances. Lectins have the ability to crack these codes and stimulate the receptors causing a variety of responses- covering basically the full repertoire of the cell and even tricking the cell into doing things it normally cannot do.

They also have a knack for bypassing our defenses and "getting behind the lines", and then they can travel all over the body causing harm. They can, for example:

--strip protective mucus off tissues,

--damage the cells lining the small intestine- disrupting the microscopic fingers called villi and microvilli,

--get swallowed whole by the small intestine cells ("pinocytosis")

--bind to cells including blood cells causing a clot to form (hence they were initially called "haemagglutins")

--make a cell act as if it has been stimulated by a hormone-

--stimulate a cell to secrete a hormone

--promote cell division at the wrong time

--cause growth or shrinkage of lymphatic tissue ("outposts" of white blood cells)

--cause enlargement of the pancreas

--cause cells to present codes (HLAs) that they normally should not use

--cause cell death (apoptosis)

Lectins break down the surface of the small intestine, stripping it of mucus and causing the cells to become irregular and leaky. Some lectins make cells act as if they have been stimulated by insulin. Others cause the pancreas to release insulin. Others cause immune cells to divide in the wrong way, causing growth of some white blood cells and breaking down the control of the immune system. Others cause cells to present the wrong codes (HLAs) on their surface, tricking the immune system into thinking that intruders have been found and activating the immune system inappropriately- thus leading to "autoimmune disease" where the body's tissues are attacked by its own immune system.

Autoimmune diseases are incredibly common and increase every year that a person gets older. A disordered immune system also has a much harder job recognizing and attacking the real intruders- invading germs and cancer cells (you may have heard that scientists think that most people generate many cancer cells in a lifetime but that the immune system cleans most of them up).

It is not known whether lectins can cause cancer- this is one of the most important questions in medicine today. They certainly affect colon cells in the test tube. I feel that they are likely candidates as they can stimulate abnormal cell growth and they also cause disorder in the immune system.

Lectins have many other roles besides defending seeds. For example in beans, lectins act like a glue to enable nitrogen-fixing bacteria to bind to the roots of the plant. Many important lectin families are found in animal tissues, but as we are carnivores, we have evolved to be able to deal with these- just as birds that live on grains have evolved to be resistant to grain lectins.

It is ironic that the lectins were discovered more than 100 years ago and yet so many questions remain unanswered- the same was true of the immune system until the 1980s. I hope that there is more research done into lectins as they hold a whole world of disease mechanisms of which most of the medical community is blissfully unaware.

Exorphins:

Exorphins are food chemicals that have morphine-like activity. They are found in dairy products and wheat. Our body has its own natural morphine-like substances that are called endorphins. Endorphins work by stimulating a type of nerve cell surface receptor called endorphin receptors. Endorphins are very important in controlling pain and addictive behaviour.

Exorphins also act on endorphin receptors and may stimulate them or block them. It is logical that exorphins may therefore affect chronic pain and also affect addictive behavior.

Additional Reading Suggested by Bill Lauritzen:

The Omega Plan

Paleolithic Prescription

Nutrition and Physical Degeneration by Weston A. Price

Nutrition and Evolution by Crawford and March

PaleoDiet by Loren Cordain

Syndrome X by Gerald Reaven

The Miracle of Fasting by Paul Bragg