**WILL THE PALEO DIET HELP RELIEVE SYMPTOMS OF ALS?**

I received a letter from a woman who has been diagnosed with ALS (amyotrophic lateral sclerosis, also known as Lou Gehrig’s disease), wondering whether eating Paleo would slow the progress or reverse the progression of the disease. She has limited income and is concerned about the cost of changing her diet if it would not help her condition.

For background information, ALS is a fatal neurodegenerative disorder characterized by the progressive loss of motor neurons in the spinal cord, brainstem and motor cortex. Clinical features include limb weakness with muscle atrophy and a progressive involvement of respiratory muscles leading to death within 3-5 years after the onset.

The precise mechanism underlying the characteristic selective degeneration and death of motor neurons remains a mystery. A variety of etiological factors have been shown to be involved in ALS including inflammation, autoimmunity, viral infection, oxidative stress, metal toxicity and mitochondrial dysfunction among others. Various pharmaceuticals have been tested to alleviate ALS symptoms of patients, but except for riluzole (which does not alter ALS mortality), none has proved to be effective.

My bias is that ALS, in certain cases, is an autoimmune disease that may be triggered by environmental/dietary factors in genetically susceptible individuals. Support for this notion comes from the over-expression of specific human leucocyte antigen (HLA) molecules (HLA-DR, DP, DQ) and the presence of immunoglobulin (IgG) in the brain and spinal cord of ALS patients. A more recent review paper also corroborates this perspective, as do the presence of autoimmune markers and certain autoantibodies in ALS patients.

There is both experimental and anecdotal support for the role of diet in the amelioration of certain autoimmune diseases as we have previously pointed out. At least one study of a young man with ALS-like symptoms (diagnosed via magnetic resonance imaging) was also diagnosed with celiac disease. Both disease symptoms improved with the adoption of a gluten-free diet.

An accumulating body of evidence now supports the view that increased intestinal permeability represents an important initial environmental trigger underlying the etiology of many autoimmune diseases. If ALS is autoimmune in nature, then dietary factors that increase intestinal permeability would worsen disease symptoms. Some but not all epidemiological studies show that NSAIDS (non-steroidal anti-inflammatory drugs, such as aspirin, ibuprofen and naproxen), which increase intestinal permeability, are associated with a twofold increased risk for ALS.

While I know of no case of ALS improving with the Paleo Diet, I also don’t know of any ALS patients who have tried the Paleo Diet in an attempt to ameliorate disease symptoms. However, I am aware of patients with MS and other neurological diseases whose symptoms have improved or disappeared with The Paleo Diet.

Indeed, fresh fruit, vegetables, fish, seafood and grass-produced meats are pricey compared to cereal grains, sugars, and processed foods. Therefore, I recommend to the woman who contacted me that she and anyone else in her position give the diet a try for a few weeks and see if there is any improvement.
If there is an autoimmune component to ALS, then a switch in diet (to the type we have suggested for autoimmune diseases\textsuperscript{11} may have a long shot at being therapeutic for her and other ALS patients. Because of the almost always fatal outcome of the disease, there wouldn’t be much to lose with this dietary strategy, as there are no known risks of consuming a contemporary Paleo Diet. If ALS symptoms continue to worsen, obviously the diet could be abandoned.

For sources see References: Section 1

WHERE ARE YOUR CALORIES COMING FROM?

In the U.S., 70.9\% of the average person’s daily calories come from refined sugars (18.6\%), refined vegetable oils (17.8\%), refined cereal grains (23.9\%) and dairy products (10.6\%). Hunter-gatherers in pre-agricultural societies rarely or never consumed these foods, hence the reason they don’t appear on the Paleo Diet’s food list.

EATING RIGHT TO REDUCE ACNE

Acne can be a big problem for many Western teenagers, and even many adults. The key to achieving clearer, blemish-free skin through diet comes mainly through foods that shouldn’t be consumed: high glycemic load carbohydrates (see references 1-3) and dairy products (4-6), both of which produce hormonal and cellular changes known to cause acne.

The evolutionary template with a diet consisting of fresh foods - fresh, grass-produced meats; poultry; seafood; fish; fresh vegetables; and healthful oils - is the best medicine for healthy skin.

For sources see References: Section II

SENSE & SENSIBILITY

They say an ounce of common sense is worth a pound of theory. From nutritional, environmental, and sustainable perspectives, local, grass or pasture produced meat, poultry and eggs makes sense. The nutritional profile of grass produced animals is superior to those force fed grains in feed lots. The meat and eggs of pasture or grass produced animals are higher in the healthful omega 3 fatty acids, protein, CLA and other nutrients.

Yet, the governmental policy that subsidizes grain, particularly corn, unwittingly encourages the production of fatty, unhealthy and low quality animals in feedlots, because it is cheaper to raise animals on governments subsidized grain than on grass and pasture.

In the end, the entire health of a population suffers because long term policy ramifications were not even considered when they were originally conceived decades ago.

THE PALEO 85:15 RULE

We have received comments that the Paleo Diet could be seen as too strict or inflexible, especially when dining out at a restaurant that may have limited Paleo food options.

That is why the 85:15 rule is built into The Paleo Diet. This means that most people can obtain substantial health and weight loss benefits if they are at least 85\% compliant with the diet. The 15\% non-compliance corresponds to three open meals a week. So if you want to go out and have pizza and beer with friends on a Saturday evening, it is permissible.

However, many people feel so bad following a nice such as that after experiencing days and weeks of high
compliance that it makes them think twice about doing it again.

On a side note, people with serious health and obesity issues should try to maintain high compliance, equating to 95% or greater.

**REDUCING ENVIRONMENTAL CONTAMINANTS: TONIC OR TOXIC?**

I was recently asked whether we can ever be 100% certain that our produce isn’t contaminated even when it is labeled Non-GMO. When we speak of “contaminated” foods, we first need to define “contamination.” In a pristine, non-agricultural, non-industrial world, despite virtually no human caused contaminants, almost all plants foods still would have contained a variety of compounds that are both: 1) healthful and 2) potentially harmful. The harmful compounds are called anti-nutrients because they may disrupt normal body function. These potentially adverse anti-nutritional effects can range from benign, to mildly toxic, to lethally toxic.

For instance, the skin of potatoes (particularly when green), contain two naturally occurring compounds: alpha-solanine and alpha-chaconine. When consumed in high concentrations, they can be lethally toxic in both humans and animals. Toxicity of Kidney Beans

Similarly, uncooked red kidney beans can be lethally toxic in laboratory rats when consumed at about 35% of daily calories. In humans, uncooked red kidney beans are mildly to severely toxic and produce severe gastrointestinal irritation, if even consumed at a single meal. Hence, natural plant foods “uncontaminated” by human produced pollutants may be much more toxic than foods “contaminated” by human industrial pollutants.

All domesticated plant foods and even gathered wild plant foods can be contaminated by a wide variety of pollutants stemming from our industrialized and technological world of the 21st century. Common contaminates infiltrating the air, water and ground may include pesticides, heavy metals, hormones, antibiotics, fertilizers and petroleum by products – all of which may find their way into our common food crops. Almost all contaminates have a varying degree of toxicity varying again from benign to lethal, but most fall somewhere in between. Toxic effect is almost always dose dependent: the more you ingest, the greater their toxic effect.

In the 21st century, there is no way to escape consuming industrial, human caused contaminates. Environmental contaminates are even found in Antarctica. The trick is to minimize the amounts you take in. Generally, organic produce contains lower pesticide concentrations than commercial produce. Typically, produce grown in rural area far from cities and population centers contains lower concentrations
of environmental contaminants. Subsidized food products such as cereal grains (corn, wheat, rice), legumes (soy, peanuts) are more likely to contain environmental contaminates because of increased exposure to pesticides and other industrial pollutants. These are also the same foods most likely to be GMO (genetically modified organisms) because scientists modify their native genetic makeup in an attempt to increase crop yield, and resistance to herbicides and plant predators (insects, fungi & bacteria).

One of the best dietary strategies to reduce environmental contaminates is to adopt The Paleo Diet and focus upon fresh fruit and vegetables (organically produced if possible, but not absolutely necessary), while reducing or eliminating foods made from subsidized crops. Try to replace grain produced meats with grass fed, and you have gone a long way in reducing human caused pollutants in your food supply.

IS HONEY PALEO?

There is absolutely no doubt that our hunter gatherer ancestors would have consumed honey whenever and wherever it was available. From the photo below, you can see that they consumed everything (the honey, the honeycomb and the larvae).

Fortunately for them, honey was only available seasonally and could not be consumed in unlimited quantities year round as we can. Although honey is a “natural” product, it has nutritional characteristics that are very un-Paleo. Below is a table contrasting honey to high fructose corn syrups (HFCS).

### Sugars

<table>
<thead>
<tr>
<th></th>
<th>Honey</th>
<th>High Fructose Corn Syrup 42</th>
<th>High Fructose Corn Syrup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fructose</td>
<td>51.7%</td>
<td>42%</td>
<td>55%</td>
</tr>
<tr>
<td>Glucose</td>
<td>41.3%</td>
<td>53%</td>
<td>42%</td>
</tr>
<tr>
<td>Maltose</td>
<td>5.1%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Sucrose</td>
<td>1.8%</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>
PRIMAL IN THE KITCHEN

CACTUS SALAD

1 16. oz. jar sliced cactus, thoroughly rinsed to remove excess sodium
1 large tomato, chopped
1/2 small red onion, diced
1/4 cup chopped fresh cilantro
1 Tb. extra virgin olive oil
1 Tb. cold-pressed flaxseed oil
2 Tb. freshly squeezed lime juice

Place cactus strips, tomato, and red onion in a large bowl. Combine cilantro, oils, and lime juice in a small jar and shake well. Pour over cactus and toss to thoroughly coat all ingredients. Refrigerate for thirty minutes.

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REFERENCES: SECTION I


REFERENCES: SECTION II


