The Dark Side of Wheat

Collection of Books and Articles on the Dangers of Eating Wheat

Books and Articles by Sayer Ji, Dr. Douglas N. Graham, Dr. J. Mercola,

Dr. Mario Piper and Dr. David Jockers

This E - Book is Available Free of Charge from bookofkindness@gmail.com

A Critical Appraisal of the Role of Wheat in Human Disease

Sayer Ji' s Book is an Internet Classic 50 000 Copies Downloads

Foreword

by Dr. Ron Hoggan

*Co - Author of "**Dangerous Grains and Cereal Killers**"*

Having studied gluten grains and their impact on human health for almost 20 years now, the surprises caused by new insights are more and more rare. Nonetheless, when I read about Sayer Ji's startling perception of wheat germ agglutinin (WGA), and the several pathways by which it can impact our mental and physical health, partly due to its ability to cross protective barriers of the gut and the brain,

I was, at first, very skeptical. Further investigation revealed that he really was onto something new. And the implications of this new understanding are, to say the least, dramatic. His work raises legitimate questions about one facet of gluten grains that has largely been ignored by the gastrointestinal research community. It opens windows of understanding.

And it provides a different vantage point on these perplexing problems. There is a whole new world revealed through Sayer Ji's work. Read on. Enjoy.

Puzzle it out. And by the end of your reading, you will wonder how your prior view could have been so simplistic and, perhaps, misguided.

After reading Sayer's work on WGA, I felt as if I had just been boosted to a higher plane from which I could see and understand much, much more.

Sayer's insights continue to shape and inform much of my effort to understand the various impacts of grains on human health.

Dr. Ron Hoggan, Ed. D.

Co-author: Dangerous Grains and Cereal Killers

Author: The Iron Edge

Editor: The Journal of Gluten Sensitivity

Contest

The Dark Side of Wheat

By Sayer Ji

The Complete Book is Available Free from: www.GreenMedInfo.com

Part I

New Perspectives on Celiac Disease & Wheat Intolerance

By Sayer Ji

www.GreenMedInfo.com

Part 1: The Dark Side of Wheat: New Perspectives on Celiac Disease & Wheat Intolerance

Part 2: Opening Pandora's Bread Box: The Critical Role of Wheat Lectin in Human Disease.

Order the 121 Diseases linked to wheat consumption in the biomedical literature.

Available Free From www.GreenMedInfo.com

Get Research Updates via their Facebook Page:

Wheat & Gluten Education Center.

Despite popular opinion wheat consumption may not be beneficial to health. These two published articles make a strong argument against perceiving wheat intolerance as simply a matter of allergy/genetic intolerance in a minority subset of the human population, but rather as a species-specific intolerance. The globe-spanning presence of wheat and its exalted status among secular and sacred institutions alike differentiates this food from all others presently enjoyed by humans.

Yet the unparalleled rise of wheat as the very catalyst for the emergence of ancient civilization has not occurred without a great price. While wheat was the engine of civilization's expansion and was glorified as a "necessary food," both in the physical (staff of life) and spiritual sense (the body of Christ), those suffering from celiac disease are living testimony to the lesser known dark side of wheat.

A study of celiac disease and may help unlock the mystery of why modern man, who dines daily at the table of wheat, is the sickest animal yet to have arisen on this strange planet of ours.

The Celiac Iceberg

Celiac Disease (CD) was once considered an extremely rare affliction, limited to individuals of European origin. Today, however, a growing number of studies indicate that celiac disease is found throughout the US at a rate of up to 1 in every 133 persons, which is several orders of magnitude higher than previously estimated. These findings have led researchers to visualize CD as an iceberg. The tip of the iceberg represents the relatively small number of the world's population whose gross presentation of clinical symptoms often leads to the diagnosis of celiac disease. This is the classical case of CD characterized by gastrointestinal symptoms, malabsorption and malnourishment. It is confirmed with the "gold standard" of an intestinal biopsy.

The submerged middle portion of the iceberg is largely invisible to classical clinical diagnosis, but not to modern serological screening methods in the form of antibody testing. This middle portion is composed of asymptomatic and latent celiac disease as well as "out of the intestine" varieties of wheat intolerance. Finally, at the base of this massive iceberg sits approximately 20-30% of the world's population – those who have been found to carry the HLA-DQ locus of genetic susceptibility to celiac disease on chromosome 6.* The "Celiac Iceberg" may not simply illustrate the problems and issues associated with diagnosis and disease prevalence, but may represent the need for a paradigm shift in how we view both CD and wheat consumption among non-CD populations. First let us address the traditional view of CD as a rare, but clinically distinct species of genetically - determined disease, which I

believe is now running itself aground upon the emerging, post-Genomic perspective, whose implications for understanding and treating disease are Titanic in proportion.

It is not genes, but what we expose them to.

Despite common misconceptions, monogenic diseases, or diseases that result from errors in the nucleotide sequence of a single gene are exceedingly rare. Perhaps only 1% of all diseases fall within this category, and Celiac disease is not one of them. In fact, following the completion of the Human Genome Project (HGP) in 2003 it is no longer accurate to say that our genes "cause" disease, any more than it is accurate to say that DNA is sufficient to account for all the proteins in our body. Despite initial expectations, the HGP revealed that there are only 20,000-25,000 genes in human DNA (genome), rather than the 100,000 + believed necessary to encode the 100,000 + proteins found in the human body (proteome).

The "blueprint" model of genetics: one gene → one protein → one cellular behavior, which was once the holy grail of biology, has now been supplanted by a model of the cell where epigenetic factors (literally: "beyond the control of the gene") are primary in determining how DNA will be interpreted, translated and expressed. A single gene can be used by the cell to express a multitude of proteins and it is not the DNA itself that determines how or what genes will be expressed. Rather, we must look to the epigenetic factors to understand what makes a liver cell different from a skin cell or brain cell. All of these cells share the exact same 3 billion base pairs that make up our DNA code, but it is the epigenetic factors, e.g. regulatory proteins and post-translational modifications, that make the determination as to which genes to turn on and which to silence, resulting in each cell's unique phenotype.

Moreover, epigenetic factors are directly and indirectly influenced by the presence or absence of key nutrients in the diet, as well as exposures to chemicals, pathogens and other environmental influences. In a nutshell, what we eat and what we are exposed to in our environment directly affects our DNA and its expression. Within the scope of this new perspective even classical monogenic diseases like Cystic Fibrosis (CF) can be viewed in a new, more promising light. In CF many of the adverse changes that result from the defective expression of the Cystic Fibrosis Transmembrane Conductance Regulator (CFTR) gene may be preventable or reversible,

owing to the fact that the misfolding of the CFTR gene product has been shown to undergo partial or full correction (in the rodent model) when exposed to phytochemicals found in turmeric, cayenne, and soybean. Moreover, nutritional deficiencies of selenium, zinc, riboflavin, vitamin e, etc. in the womb or early in life, may "trigger" the faulty expression or folding patterns of the CFTR gene in Cystic Fibrosis which might otherwise have avoided epigenetic activation.

This would explain why it is possible to live into one's late seventies with this condition, as was the case for Katherine Shores (1925-2004). The implications of these findings are rather extraordinary: epigenetic and not genetic factors are primary in determining disease outcome. Even if we exclude the possibility of reversing certain monogenic diseases, the basic lesson from the post-Genomic era is that we can't blame our DNA for causing disease. Rather, it may have more to do with what we choose to expose our DNA to.

Celiac Disease Revisited

What all of this means for CD is that the genetic susceptibility locus, HLA DQ, does not determine the exact clinical outcome of the disease. Instead of being the cause, if the HLA genes are activated, they are a consequence of the disease process. Thus, we may need to shift our epidemiological focus from viewing this as a classical "disease" involving a passive subject controlled by aberrant genes, to viewing it as an expression of a natural, protective response to the ingestion of something that the human body was not designed to consume. If we view celiac disease not as an unhealthy response to a healthy food, but as a healthy response to an unhealthy food, classical CD symptoms like diarrhea may make more sense.

Diarrhea can be the body's way to reduce the duration of exposure to a toxin or pathogen, and villous atrophy can be the body's way of preventing the absorption and hence, the systemic effects of chronic exposure to wheat. I believe we would be better served by viewing the symptoms of CD as expressions of bodily intelligence rather than deviance. We must shift the focus back to the disease trigger, which is wheat itself. People with celiac may actually have an advantage over the apparently unafflicted because those who are "non-symptomatic" and whose wheat intolerance goes undiagnosed or misdiagnosed because they lack the classical symptoms and may suffer in

ways that are equally or more damaging, but expressed more subtly, or in distant organs. Within this view celiac disease would be redefined as a protective (healthy?) response to exposure to an inappropriate substance, whereas a "symptomatic" ingestion of the grain with its concomitant "out of the intestine" and mostly silent symptoms, would be considered the unhealthy response insofar as it does not signal in an obvious and acute manner that there is a problem with consuming wheat. It is possible that celiac disease represents both an extreme reaction to a global, species-specific intolerance to wheat that we all share in varying degrees. CD symptoms may reflect the body's innate intelligence when faced with the consumption of a substance that is inherently toxic.

Let me illustrate this point using ***Wheat Germ Agglutinin*** (WGA), as an example. WGA is classified as a lectin and is known to play a key role in kidney pathologies, such as IgA nephropathy. In the article: "Do dietary lectins cause disease?" the Allergist David L J Freed points out that WGA binds to "glomerular capillary walls, mesangial cells and tubules of human kidney and (in rodents) binds IgA and induces IgA mesangial deposits," indicating that wheat consumption may lead to kidney damage in susceptible individuals. Indeed, a study from the Mario Negri Institute for Pharmacological Research in Milan Italy published in 2007 in the International Journal of Cancer looked at bread consumption and the risk of kidney cancer.

They found that those who consumed the most bread had a 94% higher risk of developing kidney cancer compared to those who consumed the least bread.

Given the inherently toxic effect that WGA may have on kidney function, it is possible that in certain genetically predisposed individuals (e.g. HLA-DQ2 / DQ8) the body – in its innate intelligence – makes an executive decision: either continue to allow damage to the kidneys (or possibly other organs) until kidney failure and rapid death result, or launch an autoimmune attack on the villi to prevent the absorption of the offending substance which results in a prolonged though relatively malnourished life.

This is the explanation typically given for the body's reflexive formation of mucous following exposure to certain highly allergenic or potentially toxic foods, e.g. dairy products, sugar, etc.

The mucous coats the offending substance, preventing its absorption and facilitating safe elimination via the gastrointestinal tract. From this perspective the HLA-DQ locus of disease susceptibility in the celiac is not simply activated but utilized as a defensive adaptation to continual exposure to a harmful substance. In those who do not have the HLA-DQ locus, an autoimmune destruction of the villi will not occur as rapidly, and exposure to the universally toxic effects of WGA will likely go unabated until silent damage to distant organs leads to the diagnosis of a disease that is apparently unrelated to wheat consumption.

Loss of kidney function may only be the "tip of the iceberg," when it comes to the possible adverse effects that wheat proteins and wheat lectin can generate in the body. If kidney cancer is a likely possibility, then other cancers may eventually be linked to wheat consumption as well. This correlation would fly in the face of globally sanctioned and reified assumptions about the inherent benefits of wheat consumption. It would require that we suspend cultural, socio-economic, political and even religious assumptions about its inherent benefits. In many ways, the reassessment of the value of wheat as a food requires a William Boroughs-like moment of shocking clarity when we perceive "in a frozen moment….what is on the end of every fork."

Let's take a closer look at what is on the end of our forks. Our biologically inappropriate diet

In a previous article, I discussed the role that wheat plays as an industrial adhesive (e.g. paints, paper mache', and book binding-glue) in order to illustrate the point that it may not be such a good thing for us to eat. The problem is implicit in the word gluten, which literally means "glue" in Latin and in words like pastry and pasta, which derives from wheatpaste, the original concoction of wheat flour and water which made such good plaster in ancient times. What gives gluten its adhesive and difficult-to-digest qualities are the high levels of disulfide bonds it contains. These same sulfur-to-sulfur bonds are found in hair and vulcanized rubber products, which we all know are difficult to decompose and are responsible for the sulfurous odor they give off when burned.

There will be 676 million metric tons of wheat produced this year alone, making it the primary cereal of temperate regions and third most prolific cereal grass on the planet.

This global dominance of wheat is signified by the Food & Agricultural Organization's (FAO) (the United Nation's international agency for defeating hunger) use of a head of wheat as its official symbol. Any effort to indict the credibility of this "king of grains" will prove challenging. As Rudolf Hauschka once remarked, wheat is "a kind of earth-spanning organism." It has vast socio-economic, political, and cultural significance. For example, in the Catholic Church, a wafer made of wheat is considered irreplaceable as the embodiment of Christ. Our dependence on wheat is matched only by its dependence on us.

As Europeans have spread across the planet, so has this grain. We have assumed total responsibility for all phases of the wheat life cycle: from fending off its pests; to providing its ideal growing conditions; to facilitating reproduction and expansion into new territories. We have become so inextricably interdependent that neither species is sustainable at current population levels without this symbiotic relationship. It is this co-dependence that may explain why our culture has for so long consistently confined wheat intolerance to categorically distinct, "genetically-based" diseases like "celiac."

These categorizations may protect us from the realization that wheat exerts a vast number of deleterious effects on human health in the same way that "lactose intolerance" distracts attention from the deeper problems associated with the casein protein found in cow's milk.

Rather than see wheat for what it very well may be: a biologically inappropriate food source, we "blame the victim," and look for genetic explanations for what's wrong with small subgroups of our population who have the most obvious forms of intolerance to wheat consumption, e.g. celiac disease, dermatitis herpetiformis, etc.

The medical justification for these classifications may be secondary to economic and cultural imperatives that require the inherent problems associated with wheat consumption be minimized or occluded. In all

probability the celiac genotype represents a surviving vestigial branch of a once universal genotype, which through accident or intention, have had through successive generations only limited exposure to wheat. The celiac genotype, no doubt, survived through numerous bottlenecks or "die offs" represented by a dramatic shift from hunted and foraged/gathered foods to gluten-grain consumption, and for whatever reason simply did not have adequate time to adapt or select out the gluten-grain incompatible genes. The celiac response may indeed reflect a prior, species-wide intolerance to a novel food source: the seed storage form of the monocotyledonous cereal grasses which our species only began consuming 1-500 generations ago at the advent of the Neolithic transition (10-12,000 BC). Let us return to the image of the celiac iceberg for greater clarification.

Our submerged grain – free metabolic prehistory

The iceberg metaphor is an excellent way to expand our understanding of what was once considered to be an extraordinarily rare disease into one that has statistical relevance for us all, but it has a few limitations. For one, it reiterates the commonly held view that Celiac is a numerically distinct disease entity or "disease island," floating alongside other numerically distinct disease "ice cubes" in the vast sea of normal health. Though accurate in describing the sense of social and psychological isolation many of the afflicted feel, the celiac iceberg/condition may not be a distinct disease entity at all. Although the HLA-DQ locus of disease susceptibility on chromosome 6 offers us a place to project blame,

I believe we need to shift the emphasis of responsibility for the condition back to the disease "trigger" itself: namely, wheat and other prolamine rich grains, e.g. barley, rye, spelt, and oats. Without these grains the typical afflictions we call celiac would not exist.

Within the scope of this view the "celiac iceberg" is not actually free floating but an outcropping from an entire submerged subcontinent, representing our long-forgotten but relatively recent metabolic prehistory as hunters-and-gatherers, where grain consumption was, in all likelihood, non-existent, except in instances of near-starvation. The pressure on the celiac to be viewed as an exceptional case or deviation may have everything to do with our preconscious belief that wheat, and grains as a whole are the "health foods," and very little to do with a rigorous investigations of the facts.

Grains have been heralded since time immemorial as the “staff of life”and not the “staff of death, “ when in fact they are more accurately described as a cane, precariously propping up a body starved of the nutrient-dense, low-starch vegetables, fruits, edible seeds and meats, they have so thoroughly supplanted (c.f. Paleolithic Diet). Most of the diseases of affluence, e.g. type 2 diabetes, coronary heart disease, cancer, etc. can be linked to the consumption of a grain-based diet, including secondary “hidden sources” of grain consumption in grain-fed fish, poultry, meat and milk products.

Our modern belief that grains make for good food, is simply not supported by the facts. The cereal grasses are within an entirely different family: monocotyledonous (one leaf) than that from which our body sustained itself for millions of years: dicotyledonous (two-leaf). The preponderance of scientific evidence points to a human origin in the tropical rainforests of Africa where dicotyledonous fruits would have been available for year round consumption. It would not have been monocotyledonous plants, but the flesh of hunted animals that would have allowed for the migration out of Africa 60,000 years ago into the northern latitudes where vegetation would have been sparse or non-existent during winter months.

Collecting and cooking grains would have been improbable given the low nutrient and caloric content of grains and the inadequate development of pyrotechnology and associated cooking utensils necessary to consume them with any efficiency.

It was not until the end of the last Ice Age 20,000 years ago that our human ancestors would have slowly transitioned to a cereal grass based diet coterminous with emergence of civilization. 20,000 years is probably not enough time to fully adapt to the consumption of grains. Even animals like cows with a head start of thousands of years, having evolved to graze on monocotyledons and equipped as ruminants with the four-chambered fore-stomach enabling the breakdown of cellulose and anti-nutrient rich plants, are not designed to consume grains.

Cows are designed to consume the sprouted mature form of the grasses and not their seed storage form. Grains are so acidic/toxic in reaction that exclusively grain-fed cattle are prone to developing severe acidosis and subsequent liver abscesses and infections, etc. Feeding wheat to cattle provides an even greater challenge: “Beef:

Feeding wheat to ruminants requires some caution as it tends to be more apt than other cereal grains to cause acute indigestion in animals which are unadapted to it. The primary problem appears to be the high gluten content of which wheat in the rumen can result in a "pasty" consistency to the rumen contents and reduced rumen motility."

(source: Ontario ministry of Agriculture food & Rural affairs)

Seeds, after all, are the "babies" of these plants, and are invested with not only the entire hope forncontinuance of its species, but a vast armory of anti-nutrients to help it accomplish this task: toxic lectins, phytates and oxalates, alpha-amalyase and trypsin inhibitors, and endocrine disrupters. These not so appetizing phytochemicals enable plants to resist predation of their seeds, or at least preventing them from "going out without a punch."

Wheat: an exceptionally unwholesome grain

Wheat presents a special case insofar as wild and selective breeding has produced variations which include up to 6 sets of chromosomes (3x the human genome worth!) capable of generating a massive number of proteins each with a distinct potentiality for antigenicity. Common bread wheat (Triticum aestivum), for instance, has over 23,788 proteins cataloged thus far. In fact, the genome for common bread wheat is actually 6.5 times larger than that of the human genome! With up to a 50% increase in gluten content of some varieties of wheat, it is amazing that we continue to consider “glue-eating” a normal behavior, whereas wheat-avoidance is left to the “celiac” who is still perceived by the majority of health care practitioners as mounting a “freak” reaction to the consumption of something intrinsically wholesome.

Thankfully we don’t need to rely on our intuition, or even (not so) common sense to draw conclusions about the inherently unhealthy nature of wheat. A wide range of investigation has occurred over the past decade revealing the problem with the alcohol soluble protein component of wheat known as gliadin, the glycoprotein known as lectin (Wheat Germ Agglutinin), the exorphin known as gliadomorphin, and the excitotoxic potentials of high levels of aspartic and glutamic acid found in wheat. Add to these the anti-nutrients found in grains such as phytates, enzyme inhibitors, etc. and you

have a substance which we may more appropriately consider the farthest thing from wholesome. The remainder of this article will demonstrate the following adverse effects of wheat on both celiac and non-celiac populations: 1) wheat causes damage to the intestines 2) wheat causes intestinal permeability 3) wheat has pharmacologically active properties 4) wheat causes damage that is "out of the intestine" affecting distant organs 5) wheat induces molecular mimicry 6) wheat contains high concentrations of excitoxins.

1. Wheat gliadin creates immune mediated damage to the intestines

Gliadin is classified as a prolamin, which is a wheat storage protein high in the amino acids proline and glutamine and soluble in strong alcohol solutions. Gliadin, once deamidated by the enzyme Tissue Transglutaminase, is considered the primary epitope for T-cell activation and subsequent autoimmune destruction of intestinal villi. Yet gliadin does not need to activate an autoimmune response, e.g. Celiac disease, in order to have a deleterious effect on intestinal tissue. In a study published in GUT in 2007 a group of researchers asked the question: "Is gliadin really safe for non-coeliac individuals?" In order to test the hypothesis that an innate immune response to gliadin is common in patients with celiac disease and without celiac disease, intestinal biopsy cultures were taken from both groups and challenged with crude gliadin, the gliadin synthetic 19-mer (19 amino acid long gliadin peptide) and 33-mer deamidated peptides.

Results showed that all patients with or without Celiac disease when challenged with the various forms of gliadin produced an interleukin-15-mediated response. The researchers concluded: "The data obtained in this pilot study supports the hypothesis that gluten elicits its harmful effect, throughout an IL15 innate immune response, on all individuals [my italics]." The primary difference between the two groups is that the celiac disease patients experienced both an innate and an adaptive immune response to the gliadin, whereas the non-celiacs experienced only the innate response. The researchers hypothesized that the difference between the two groups may beattributable to greater genetic susceptibility at the HLA-DQ locus for triggering an adaptive immune response, higher levels of immune mediators or receptors, or perhaps greater permeability in the celiac intestine. It is

possible that over and above the possibility of greater genetic susceptibility, most of the differences are from epigenetic factors that are influenced by the presence or absence of certain nutrients in the diet. Other factors such as exposure to NSAIDs like naproxen or aspirin can profoundly increase intestinal permeability in the non-celiac, rendering them susceptible to gliadin's potential for activating secondary adaptive immune responses. This may explain why in up to 5% of all cases of classically defined celiac disease the typical HLA-DQ haplotypes are not found. However, determining the factors associated greater or lesser degrees of susceptibility to gliadin's intrinsically toxic effect should be a secondary to the fact that it is has been demonstrated to be toxic to both non-celiacs and celiacs.

2. Wheat gliadin creates intestinal permeability

Gliadin upregulates the production of a protein known as zonulin, which modulates intestinal permeability. Over-expression of zonulin is involved in a number of autoimmune disorders, including celiac disease and Type 1 diabetes. Researchers have studied the effect of gliadin on increased zonulin production and subsequent gut permeability in both celiac and non-celiac intestines, and have found that "gliadin activates zonulin signaling irrespective of the genetic expression of autoimmunity, leading to increased intestinal permeability to macromolecules."10 These results indicate, once again, that a pathological response to wheat gluten is a normal or human, species specific response, and is not based entirely on genetic susceptibilities. Because intestinal permeability is associated with wide range of disease states, including cardiovascular illness, liver disease and many autoimmune disorders, I believe this research indicates that gliadin (and therefore wheat) should be avoided as a matter of principle.

3. Wheat gliadin has pharmacological properties

Gliadin can be broken down into various amino acid lengths or peptides. Gliadorphin is a 7 amino acid long peptide: Tyr-Pro-Gln-Pro-Gln-Pro-Phe which forms when the gastrointestinal system is compromised. When digestive enzymes are insufficient to break gliadorphin down into 2-3 amino acid lengths and a compromised intestinal wall allows for the leakage of the entire 7 amino acid long fragment into the blood, glaidorphin can pass through to the brain through circumventricular organs and activate opioid receptors resulting in disrupted brain function.

There have been a number of gluten exorphins identified: gluten exorphin A4, A5, B4, B5 and C, and many of them have been hypothesized to play a role in autism, schizophrenia, ADHD and related neurological conditions. In the same way that the celiac iceberg illustrated the illusion that intolerance to wheat is rare, it is possible, even probable, that wheat exerts pharmacological influences on everyone.

What distinguishes the schizophrenic or autistic individual from the functional wheat consumer is the degree to which they are affected. Below the tip of the "Gluten Iceberg," we might find these opiate-like peptides to be responsible for bread's general popularity as a "comfort food", and our use of phrases like "I love bread," or "this bread is to die for" to be indicative of wheat's narcotic properties.

I believe a strong argument can be made that the agricultural revolution that occurred approximately 10-12,000 years ago as we shifted from the Paleolithic into the Neolithic era was precipitated as much by environmental necessities and human ingenuity, as it was by the addictive qualities of psychoactive peptides in the grains themselves. The world-historical reorganization of society, culture and consciousness accomplished through the symbiotic relationship with cereal grasses, may have had as much to do with our ability to master agriculture, as to be mastered by it. The presence of pharmacologically active peptides would have further sweetened the deal, making it hard to distance ourselves from what became a global fascination with wheat.

"Cereals have important qualities that differentiate them from most other drugs. They are a food source as well as a drug, and can be stored and transported easily. They are ingested in frequent small doses (not occasional large ones), and do not impede work performance in most people.

A desire for the drug, even cravings or withdrawal, can be confused with hunger. These features make cereals the ideal facilitator of civilization (and may also have contributed to the long delay in recognizing their pharmacological properties)."

4. Wheat lectin (WAG) damages our tissue

Wheat contains a lectin known as Wheat Germ Agglutinin which is responsible for causing direct, non-immune mediated damage to our intestines, and subsequent to entry into the bloodstream, damage to distant organs in our body.

Lectins are sugar-binding proteins which are highly selective for their sugar moieties. It is believed that wheat lectin, which binds to the monosaccharide N-acetyl glucosamine (NAG), provides defense against predation from bacteria, insects and animals. Bacteria have NAG in their cell wall, insects have an exoskeleton composed of polymers of NAG called chitin, and the epithelial tissue of mammals, e.g. gastrointestinal tract, have a "sugar coat" called the glycocalyx which is composed, in part, of NAG. The glycocalyx can be found on the outer surface (apical portion) of the microvilli within the small intestine.

There is evidence that WGA may cause increased shedding of the intestinal brush border membrane, reduction in surface area, acceleration of cell losses and shortening of villi, via binding to the surface of the villi.

WGA can mimic the effects of epidermal growth factor (EGF) at the cellular level, indicating that the crypt hyperplasia seen in celiac disease may be due to a mitogenic reponse induced by WGA. WGA has been implicated in obesity and "leptin resistance" by blocking the receptor in the hypothalamus for the appetite satiating hormone leptin. WGA has also been shown to have an insulin-mimetic action, potentially contributing to weight gain and insulin resistance.15

And, as discussed earlier, wheat lectin has been shown to induce IgA mediated damage to the kidney, indicating that nephropathy and kidney cancer may be associated with wheat consumption.

5. Wheat contains peptides exhibit molecular mimicry

Gliadorphin and gluten exporphins exhibit a form of molecular mimicry that affects the nervous system, but other wheat proteins effect different organ

systems. The digestion of gliadin produces a peptide that is 33 amino acids long and is known as 33-mer which has a remarkable homology to the internal sequence of pertactin, the immunodominant sequence in the Bordetella pertussis bacteria (whooping cough). Pertactin is considered a highly immunogenic virulence factor, and is used in vaccines to amplify the adaptive immune response. It is possible the immune system may confuse this 33-mer with a pathogen resulting in either or both a cell-mediated and adaptive immune response against Self.

6. Wheat contains high levels of excitotoxins

John B. Symes, D.V. M. is responsible for drawing attention to the potential excitotoxicity of wheat, dairy, and soy, due to their exceptionally high levels of the non-essential amino acids glutamic and aspartic acid. Excitotoxicity is a pathological process where glutamic and aspartic acid cause an over-activation of the nerve cell receptors (e.g. NMDA and AMPA receptor) leading to calcium induced nerve and brain injury. Of all cereal grasses commonly consumed wheat contains the highest levels of glutamic acid and aspartic acid. Glutamic acid is largely responsible for wheat's exceptional taste.

The Japanese coined the word umami to describe the extraordinary "yummy" effect that glutamic acid exerts on the tongue and palate, and invented monosodium glutamate (MSG) to amplify this sensation. Though the Japanese first synthesized MSG from kelp, wheat can also be used due to its high glutamic acid content. It is likely that wheat's popularity, alongside its opiate-like activity, has everything to do with the natural flavor-enhancers already contained within it.

These amino acids may contribute to neurodegenerative conditions such as multiple sclerosis, Alzhemier disease, Huntington's disease, and other nervous disorders such as epilepsy, attention deficit disorder and migraines.

Conclusion

In this article I have proposed that celiac disease be viewed not as a rare "genetically-determined" disorder, but as an extreme example of our body communicating to us a once universal, species-specific affliction: severe

intolerance to wheat. Celiac disease reflects back to us how profoundly our diet has diverged from what was, until only recently a grain free diet, and even more recently, a wheat free one. We are so profoundly distanced from that dramatic Neolithic transition in cultural time that "missing is any sense that anything is missing." The body, on the other hand, cannot help but remember a time when cereal grains were alien to the diet, because in biological time it was only moments ago.

Eliminating wheat, if not all of the members of the cereal grass family, and returning to dicotyledons or pseudo-grains like quinoa, buckwheat and amaranth, may help us roll back the hands of biological and cultural time, to a time of clarity, health and vitality that many of us have never known before.

When one eliminates wheat and fills the void left by its absence with fruits, vegetables, high quality foods consistent with our biological needs we may begin to feel a sense of vitality that many would find hard to imagine.

If wheat really is more like a drug than a food, anesthetizing us to its ill effects on our body, it will be difficult for us to understand its grasp upon us unless and until we eliminate it from our diet. I encourage everyone to see celiac disease not as a condition alien to our own.

Rather, the celiac gives us a glimpse of how profoundly wheat may distort and disfigure our health if we continue to expose ourselves to its ill effects. I hope this article will provide inspiration for non-celiacs to try a wheat free diet and judge for themselves if it is really worth eliminating.

References

** Genome screening of coeliac disease*

1 Celiac disease: an emerging global problem Journal of Pediatric Gastroenterology and Nutrition 2002 Oct; 35 (4): 472-4

2 Richard Logan is responsible for first introducing the "Celiac Iceberg" metaphor in 1991

3 Antibody testing for gliadin, tissue transglutaminase and endomysium indicates that

“silent” or“latent” celiac disease is up to a 100 times more frequent than represented by the classical form.

4 Frontiers in Celiac Disease by Alessio Fasano, R. Troncone, D. Branski Published by Karger Publishers, / pg. 242

5 See: www.patienthealthyself.info/Cystic_Fibrosis.html for Medline citations.

6 Cystic Fibrosis: a perinatal manifestation of selenium deficiency. Wallach JD, Germaise B. In:

Hemphill DD, ed. Trace substances in environmental health. Columbia: University of Missouri Press, 1979;

7 Genetic dissection between silent and clinically diagnosed symptomatic forms of coeliac disease in multiplex families. Digestive and Liver Disease 2002 Dec;34(12):842-5.

8 "Coelionomics": towards understanding the molecular pathology of coeliac disease. Clinical Chemistry and Laboratory Medicine 2005;43(7):685-95.

9 Is gliadin really safe for non-coeliac individuals? Gut 2007;56:889-890; doi:10.1136/gut.2006.

10 “Do Dietary Lectins cause disease?” David L J Freed, BMJ 1999;318:1023-1024

11 “Food groups and renal cell carcinoma: a case-control study from Italy.” International Journal of Cancer 2007 Feb 1;120(3):681-5.

12 Unglued: The Sticky Truth About Wheat, Dairy, Corn and Soy. Scott-Free Newsletter, Autumn 2008

13 Exploring the Plant Transcriptome through Phylogenetic Profiling. Plant Physiology Vol. 137, 2005; pg.

14 An Introduction to Genetic Engineering. By Desmond S. T. Nicholl, Cambridge University Press, 2002,

15 Footnote 7, supra.

16 “Gliadin, zonulin and gut permeability: Effects on celiac and non-celiac intestinal mucosa and

intestinal cell lines.” Scandinavian Journal of Gastroenterology Apr;41(4):408-19.

17 “The origins of agriculture ? a biological perspective and a new hypothesis” by

Greg Wadley & Angus Martin, Australian Biologist 6:96- 105, June 1993

18 In vivo responses of rat intestinal epithelium to intraluminal dietary lectins. Gastroenterology. 1982 May;82(5 Pt 1):838-48.

19 Elevated levels of serum antibodies to the lectin wheat germ agglutinin in celiac children lend support to the gluten-lectin theory of celiac disease. Pediatric Allergy Immunology 1995 May;6(2):98-102.

20 Agrarian diet and diseases of affluence – Do evolutionary novel dietary lectins cause leptin resistance BMC Endocrine Disorders 2005, 5:10

21 Insulin-mimetic actions of wheat germ agglutinin and concanavalin A on specific mRNA levels. Archives of Biochemistry and Biophysics 1987 Apr;254(1):110-5. (the 2nd part of this article entitled)

Part Two

Opening Pandora's Bread Box:

The Critical Role of Wheat Lectin

in Human Disease.

by Sayer Ji, founder of GreenMedInfo.com

Now that celiac disease has been allowed official entry into the pantheon of established medical conditions, and gluten intolerance is no longer entirely a fringe medical concept, the time has come to draw attention to the powerful little chemical in wheat known as 'wheat germ agglutinin' (WGA) which is largely responsible for many of wheat's pervasive, and difficult to diagnose, ill effects.

Not only does WGA throw a monkey wrench into our assumptions about the primary causes of wheat intolerance, but due to the fact that WGA is found in highest concentrations in "whole wheat," including its supposedly superior sprouted form, it also pulls the rug out from under one of the health food industry's favorite poster children.

Below the radar of conventional serological testing for antibodies against the various gluten proteins and genetic testing for disease susceptibility, the WGA "lectin problem" remains almost entirely obscured. Lectins, though found in all grains, seeds, legumes, dairy and our beloved nightshades: the tomato and potato, are rarely discussed in connection with health or illness, even when their presence in our diet may greatly reduce both the quality and length of our lives. Although significant progress has been made in exposing the dark side of wheat over the past decade, gluten receives a disproportionate share of the attention.

Given that modern bread wheat (Triticum Aestivum) is a hexaploid species containing six distinct sets of chromosomes capable of producing well over 23,000 unique proteins, it is not surprising that we are only now beginning to unravel the complexities of this plant's many secrets. [1] What is unique about WGA is that it can do direct damage to the majority of tissues in the human body without requiring a specific set of genetic susceptibilities and/or immune-mediated articulations. This may explain why chronic inflammatory and degenerative conditions are endemic to wheat-consuming populations even when overt allergies or intolerances to wheat gluten appear exceedingly rare. The future fate of wheat consumption, and by implication our health, may depend largely on whether or not the toxic qualities of WGA come to light in the general population. Nature engineers, within all species, a set of defenses against predation, though not all are as obvious as the thorns on a rose or the horns on a rhinoceros. Plants do not have the cell-mediated

immunity of higher life forms, like ants, nor do they have the antibody driven, secondary immune systems of vertebrates with jaws. They must rely on a much simpler, innate immunity. It is for this reason that seeds of the grass family, e.g. rice, wheat, spelt, rye, have exceptionally high levels of defensive glycoproteins known as lectins, which function much like "invisible thorns." Cooking, sprouting, fermentation and digestion are the traditional ways in which man, for instance, deals with the various anti-nutrients found within this family of plants, but lectins are, by design, particularly resistant to degradation through a wide range of pH and temperatures. WGA lectin is an exceptionally tough adversary as it is formed by the same disulfide bonds that make vulcanized rubber and human hair so strong, flexible and durable.

Like man-made pesticides, lectins are extremely small, resistant to break-down by living systems, and tend to accumulate and become incorporated into tissues where they interfere with normal biological processes. Indeed, WGA lectin is so powerful as an insecticide that biotech firms have used recombinant DNA technology to create genetically modified WGA-enhanced plants. We can only hope that these virtually unregulated biotech companies, who are in the business of playing God with the genetic infrastructure of Life, will realize the potential harm to humans that such genetic modifications can cause. Lectins are sugar-binding proteins, and through thousands of years of selectively breeding wheat for increasingly larger quantities of protein, the concentration of WGA lectin has increased proportionately. This, no doubt, has contributed to wheat's global dominance as one of the world's favored monocultures, offering additional "built-in" pest resistance.

Nature has designed WGA perfectly to attach to, disrupt, and gain entry through these mucosal surfaces. It may strike some readers as highly suspect that wheat - the "staff of life" - which has garnered a reputation for "wholesome goodness" the world over, could contain a powerful health-disrupting anti-nutrient, which is only now coming to public attention. WGA has been overshadowed by the other proteins in wheat. Humans – not Nature – have spent thousands of years cultivating and selecting for larger and larger quantities of these proteins. These pharmacologically active, opiate-like proteins in gluten are known as gluten exorphins (A5, B4, B5, C) and gliadorphins. They may effectively anesthetize us, in the short term, to the long term, adverse effects of WGA. Gluten also contains exceptionally high levels of the excitotoxic l-aspartic and l-glutamic amino acids, which can also be highly addictive, not unlike their synthetic shadow molecules aspartame

and monosodium glutamate.1 In a previous article on the topic, The Dark Side of Wheat: New Perspectives on Celiac Disease and Wheat Intolerance[2], we explored the role that these psychotropic qualities in grains played in ushering in civilization at the advent of the Neolithic transition 10,000 BC. No doubt the narcotic properties of wheat are the primary reason why suspicions about its toxicity have remained merely speculation for thousands upon thousands of years. WGA is most concentrated in the seed of the wheat plant, likely due to the fact that the seeds are the "babies" of these plants and are invested with the entire hope for continuance of their species.

Protecting the seed against predation is necessarily a first priority. WGA is an exceedingly small glycoprotein (36 kilodaltons) and is concentrated deep within the embryo of the wheat berry (approximately 1 microgram per grain). WGA migrates during germination to the roots and tips of leaves, as the developing plant begins to project itself into the world and outside the safety of its seed. In its quest for nourishment from the soil, its roots are challenged with fungi and bacteria that seek to invade the plant. In its quest for sunlight and other nourishment from the heavens the plant's leaves become prey to insects, birds, mammals, etc.

Even after the plant has developed beyond the germination and sprouting stages it contains almost 50% of the levels of lectin found in the dry seeds. Approximately one third of this WGA is in the roots and two thirds is in the shoot, for at least 34 days [3] Each grain contains about 1 microgram of WGA. That seems hardly enough to do any harm to animals our size. Lectins, however, are notoriously dangerous even in minute doses and can be fatal when inhaled or injected directly into the bloodstream. According to the U.S. Centers for Disease Control it takes only 500 micrograms (about half a grain of sand) of ricin (a lectin extracted from castor bean casings) to kill a human.

A single, one ounce slice of wheat bread contains approximately 500 micrograms of WGA,
which if it were refined to its pure form and injected directly into the blood, could, in theory,
have platelet aggregating and erythrocyte agglutinizing effects strong enough to create
an obstructive clot such as occurs
in myocardial infarction and stroke.

This, however, is not a likely route of exposure and in reality the immediate pathologies associated with lectins like ricin and WGA are largely restricted to the gastrointestinal tract where they cause mucosal injuries. The point is that WGA, even in small quantities, could have profoundly adverse effects, given suitable conditions. Ironically, WGA is exceptionally small, at 36 kilodaltons (approximately the mass of 36,000 hydrogen atoms) and it can pass through the cell membranes of the intestine with ease. The intestines will allow passage of molecules up to 1,000 kilodaltons in size. Moreover, one wheat kernel contains 16.7 trillion individual molecules of WGA, with each molecule of WGA having four N-Acetylglucosamine binding sites.

The disruptive and damaging effects of whole wheat bread consumption are formidable in someone whose protective mucosal barrier has been compromised by something as simple as Non-Steroidal Anti-Inflammatory Drug (NSAID) use, or a recent viral or bacterial infection. The common consumption of both wheat and NSAIDs may suggest the frequency of the WGA vicious cycle. Anti-inflammatory medications, such as ibuprofen and aspirin, increase intestinal permeabilty and may cause absorption of even larger than normal quantities of pro-inflammatory WGA. Conversely, the inflammation caused by the absorption of WGA lectin is the very reason there is a great need for the inflammation-reducing effects of NSAIDs.

One way to gauge just how pervasive the adverse effects of WGA are among wheat-consuming populations is the popularity of the dietary supplement glucosamine.In the USA, a quarterbillion dollars' worth of the glucosamine is sold annually.

The main source of glucosamine on the market is from the N-Acetylglucosamine rich chitin exoskelotons of crustaceans, like shrimp and crab. Glucosamine is used for reducing pain and inflammation. We do not have a dietary deficiency of the pulverized shells of dead sea critters, just as our use of NSAIDs is not caused by a deficiency of these synthetic chemicals in our diet. When we consume glucosamine supplements, the WGA, instead of binding to our tissues, binds to the pulverized chitin in the glucosamine supplements, sparing us from the full impact of WGA. Many millions of Americans who have greatly reduced their pain and suffering by ingesting

glucosamine and NSAIDs may be better served by removing wheat, the underlying cause of their malaise, from their diets. This would result in even greater relief from pain and inflammation along with far less dependency on palliative supplements and medicines alike.

To further underscore this point, the following are several ways that WGA depletes our health while glucosamine works against it:

WGA may be Pro-inflammatory

At exceedingly small concentrations (nanomolar) WGA stimulates the synthesis of pro-inflammatory chemical messengers (cytokines) includingInterleukin 1, Interleukin 6 and Interleukin 8 in intestinal and immune cells.[4] WGA has been shown to induce NADPH-Oxidase in human neutrophils associated with the “respiratory burst” that results in the release of inflammatory free radicals called reactive oxygen species[5] WGA has been shown to play a causative role in patients with chronic thin gut inflammation.[6]

WGA may be Immunotoxic

WGA induces thymus atrophy in rats[7] and may directly bind to, and activate, leukocytes [8]. Anti-WGA antibodies in human sera have been shown to cross-react with other proteins, indicating that they may contribute to autoimmunity [9]. Indeed, WGA appears to play a role in the pathogenesis of celiac disease (CD) that is entirely distinct from that of gluten, due to significantly higher levels of IgG and IgA antibodies against WGA found in patients with CD, when compared with patients with other intestinal disorders. These antibodies have also shown not to cross-react with gluten antigens[10] [11]

WGA may be Neurotoxic

WGA can pass through the blood brain barrier (BBB) through a process called "adsorptive endocytosis"[12] and is able to travel freely among the tissues of the brain which is why it is used as a marker for tracing neural circuits[13]. WGA’s ability to pass through the BBB, pulling bound substances with it, has piqued the interest of pharmaceutical developers who

are looking to find ways of delivering drugs to the brain. WGA has a unique binding affinity for N-Acetylneuraminic acid, a crucial component of neuronal membranes found in the brain, such as gangliosides which have diverse roles such as cell-to-cell contact, ion conductance, as receptors, and whose dysfunction has been implicated in neurodegenerative disorders. WGA may attach to the protective coating on the nerves known as the myelin sheath[14] and is capable of inhibiting nerve growth factor [15] which is important for the growth, maintenance, and survival of certain target neurons. WGA binds to N-Acetylglucosamine which is believed to function as an a typical neurotransmitter functioning in nocioceptive (pain) pathways.

WGA may be Cytotoxic

WGA has been demonstrated to be cytotoxic to both normal and cancerous cell lines, capable of inducing either cell cycle arrest or programmed cell death (apoptosis).[16] WGA may interfere with Gene Expression WGA demonstrates both mitogenic and anti-mitogenic[17] activities. WGA may prevent DNA replication[18] WGA binds to polysialic acid (involved in post-translational modifications) and blocks chick tail bud development in embryogenesis, indicating that it may influence both genetic and epigenetic factors.

WGA may disrupt Endocrine Function

WGA has also been shown to have an insulin-mimetic action, potentially contributing to weight gain and insulin resistance [19]. WGA has been implicat receptor in the hypothalamus for the appetite satiating hormone leptin. WGA stimulates epidermal growth factor which when upregulated is associated with increased risk of cancer. WGA has a particular affinity for thyroid tissue and has been shown to bind to both benign and malignant thyroid nodules[20] WGA nterferes with the production of secretin from the pancreas, which can interfere with digestion and can cause pancreatic hypertrophy. WGA attaches to sperm and ovary cells, indicating it may adversely nfluence fertility.

WGA may be Cardiotoxic

WGA induces platelet activation and aggregation [21]. WGA has a potent, disruptive effect on platelet endothelial cell adhesion molecule-1, which

plays a key role in tissue regeneration and safely removing neutrophils from our blood vessels. [22] WGA may adversely effect Gastrointestinal Function WGA causes increased shedding of the intestinal brush border membrane, reduction in surface area, acceleration of cell losses and shortening of villi, via binding to the surface of the villi.

WGA can mimic the effects of epidermal growth factor (EGF) at the cellular level, indicating that the crypt hyperplasia seen in celiac disease may be due to the growth-promoting effects of WGA. WGA causes cytoskeleton degradation in intestinal cells, contributing to cell death and increased turnover. WGA decreases levels of heat shock proteins in gut epithelial cells leaving these cells less well protected against the potentially harmful content of the gut lumen. [23]

WGA may share pathogenic similarities with certain Viruses. There are a number of interesting similarities between WGA lectin and viruses. Both viral particles and WGA lectin are several orders of magnitude smaller than the cells they enter, and subsequent to their attachment to both influenza and WGA gain entry through the sialic acid coatings of our mucous membranes (glycocalyx) each with a sialic acid specific substance, the neuriminidase enzyme for viruses and the sialic acid binding sites on the WGA lectin.

Once the influenza virus and WGA lectin have made their way into wider circulation in the host body they are both capable of blurring the line in the host between self-and non-self. Influenza accomplishes this by incorporating itself into the genetic material of our cells and taking over the protein production machinery to make copies of itself, with the result that our immune system must attack its own virally transformed cell, in order to clear the infection. Studies done with herpes simplex virus have shown that WGA has the capacity to block viral infectivity through competitively binding to the same cell surface receptors, indicating that they may effect cells through very similar pathways.

WGA has the capability of influencing the gene expression of certain cells, e.g. mitogenic/anti-mitogenic action, and like other lectins associated with autoimmunity, e.g. soy lectin, and viruses like Epstein-Barr Virus, WGA may be capable of causing certain cells to exhibit class 2 human leukocyte antigens (HLA-II), which mark them for autoimmune destruction by white blood cells. Since human antibodies to WGA have been shown to cross react with other proteins, even if WGA does not directly transform the phenotype

of our cells into "other," the resulting cross-reactivity of antibodies to WGA with our own cells would result in autoimmunity nonetheless. Given the multitude of ways in which WGA may disrupt our health, gain easy entry through our intestine into systemic circulation, and remain refractory to traditional antibody-based clinical diagnoses, it is altogether possible that the consumption of wheat is detracting from the general health of the wheat-consuming world and that we have been, for all these years, "digging our graves with our teeth."

This perspective may come as a great surprise to the health food industry whose particular love affair for whole wheat products has begun to go mass market. The increasingly hyped-up marketing of "whole wheat," "sprouted grain," and "wheat germ" enriched products, all of which may have considerably higher levels of WGA than their processed, fractionized, non-germinated and supposedly "less healthy" equivalents, may contribute to making us all significantly less healthy.

It is my belief that a careful study of the wheat plant will reveal that, despite claims to the contrary, man does not have dominion over nature. All that he deems fit for his consumption may not be his inborn right.

Though the wheat plant's apparently defenseless disposition would seem to make it suitable for mass human consumption, it has been imbued with a multitude of invisible "thorns,"
with WGA being its smallest and perhaps most potent defense against predation.
While WGA may be an uninvited guest at our table, wheat is equally inhospitable to us.

Perhaps the courteous thing to do, having realized our mistaken intrusion, is to lick our wounds and simply go our separate ways.
Perhaps as the distance between man and his infatuation with wheat grows, he will grow closer to himself and will discover far more suitable forms of nourishment that
Nature has not impregnated with such high levels of addictive and potentially debilitating proteins.

***

View 40+ studies on Wheat Germ Lectin (WGA)

on the GreenMedInfo. com WGA page.

This study is critically acclaimed internet classic, The Dark Side of Wheat is now available to own as a downloadable document exclusively from

GreenMedInfo.com.

It includes two hard-hitting essays that represent a seachange in the way wheat intolerance is comprehended; no longer a rare, strictly genetically-based disease, wheat is revealed to be a species-specific intolerance, whose role in health and disease has been greatly misunderstood since ancient times.

The downloadable document also includes a 90-page quick reference guide containing hyperlinks to research on the National Library of Medicine on over 120 diseases that have been linked to wheat consumption.

The Dark Side of Wheat has changed many minds about the exalted status of wheat among secular and sacred institutions alike.

As Dr. Ron Hoggan, the co-author of "Dangerous Grains" puts it in the foreword:

"Sir Isaac Newton's famous metaphor (perhaps quoting others) said something to the effect that we see further, not because of any special endowment of our own, but because we are standing on the shoulders of giants. After reading Sayer's work on wheat, I felt as if I had just been boosted to a higher plane from which I could see and understand much, much more. Sayer's insights continue to shape and inform much of my effort to understand the various impacts of grains on human health."

References

[1] Desmond S. T. Nicholl,An Introduction to Genetic Engineering,3rd Edition ISBN-13: 9780521615211

[2]Ji, Sayer "The Dark Side of Wheat - New Perspectives on Celiac Disease & Wheat Intolerance." Winter, 08', Journal of Gluten Sensitivity

[3]Distribution of Wheat Germ Agglutinin in Young Wheat Plants. Plant Physiol. 1980 Nov;66(5):950-955. PMID: 16661559

[4]Effects of wheat germ agglutinin on human gastrointestinal epithelium: insights from an experimental model of immune/epithelial cell interaction.Toxicol and Applied Pharmacology 2009Jun 1;237(2):146-53. Epub 2009 Mar 28. PMID 19332085

[5]Wheat germ agglutinin induces NADPH-oxidase activity in human neutrophils by interaction with mobilizable receptors.Infection and Immunity.1999 Jul;67(7):3461-8. PMID 10377127

[6] Lectin glycosylation as a marker of thin gut inflammation. The FASEB Journal. 2008;22:898.3

[7] Antinutritive effects of wheat-germ agglutinin and other N-acetylglucosamine-specific lectins.The British Journal ofNutrition 1993 Jul;70(1):313-21. PMID: 8399111

[8] Lectinlike properties of pertussis toxin. .Infection and Immunity1989 Jun;57(6):1854-7.PMID:2722243

[9]Natural human antibodies to dietary lectins. FEBS Lett.1996 Nov 18;397(2-3):139-42. PMID: 8955334

[10]Antibodies to wheat germ agglutinin in coeliac disease. Clin Exp Immunol. 1986 January; 63(1): 95–100. PMID: 3754186

[11] Elevated levels of serum antibodies to the lectin wheat germ agglutinin in celiac children lend support to the gluten-lectin theory of celiac disease. Pediatr Allergy Immunol. 1995 May;6(2):98-102. PMID: 7581728

[12] Transcytotic pathway for blood-borne protein through the blood-brain barrier.Proceedings from the National Academy ofSciences U S A. 1988 Jan;85(2):632-6. PMID:2448779

[13]Transsynaptic transport of wheat germ agglutinin expressed in a subset of type II taste cells of transgenic mice. BMC Neuroscience.2008 Oct 2;9:96. PMID: 18831764
[14]Distribution of concanavalin A and wheat germ agglutinin binding sites in the rat peripheral nerve fibres revealed by lectin/glycoprotein-gold histochemistry. TheHistochem Journal.1996 Jan;28(1):7-

12.PMID:8866643

[15]Wheat germ agglutinin, concanavalin A, and lens culinalis agglutinin block the inhibitory effect of nerve growth factor on cell-free phosphorylation of Nsp100 in PC12h cells.Cell Struct and Function1989

Feb;14(1):87-93. PMID:2720800

[16] Wheat germ lectin induces G2/M arrest in mouse L929 fibroblasts. J Cell Biochem. 2004 Apr 15;91(6):1159-73.PMID:15048871

[17] Wheat germ agglutinin and concanavalin A inhibit the response of human fibroblasts to peptide growth factors by a post-receptor mechanism. J Cell Physiol. 1985 Sep;124(3):474-80. PMID: 2995421

[18]DNA replication in cell-free extracts from Xenopus eggs is prevented by disrupting nuclear envelope function.J Cell Sci. 1992 Jan;101 (Pt 1):43-53.PMID: 1569128

[19]Effects of wheat germ agglutinin and concanavalin A on the accumulation of glycosaminoglycans in
pericellular matrix of human dermal fibroblasts. A comparison with insulin.Acta Biochim / Pol.2001;48(2):563-72. PMID: 11732625

[20]Analysis of lectin binding in benign and malignant thyroid nodules. Arch Pathol Lab Med.1989 Feb;113(2):186-9. PMID: 2916907

[21]Further characterization of wheat germ agglutinin interaction with human platelets: exposure of

fibrinogen receptors.Thromb Haemost.1986 Dec 15;56(3):323-7.PMID: 3105108

[22]Wheat germ agglutinin-induced platelet activation via platelet endothelial cell adhesion molecule-1:

involvement of rapid phospholipase C gamma 2 activation by Src family kinases. Biochemistry. 2001 Oct 30;40(43):12992-3001.PMID:11669637

[23]Decreased levels of heat shock proteins in gut epithelial cells after exposure to plant lectins. Gut.

Dr. Douglas N. Graham

The Dangers of Eating Grains

"There is NOT ONE example of an animal with anatomy and physiology similar to ours that consumes grain."

This is a Condensed Promotional Version of the Book "Grain Damage"

The Complete Version of this Book

with 52 Pages is Available from:

www. foodnsport.com

Nature is our only Example

Nature has seen fit to provide the ideal food for every creatures on Earth, and all creatures of similar type eat similarly. For example, horses – and all creatures that look like horses (zebras, donkeys and mules) – eat from essentially the same category of foods – those for which their biological systems were designed.

Do not let anyone tell you that humans are the one exception to this rule (called the law of similar) in all of the animal kingdom, for there are no exceptions: Cows eat grass, leopards eat meat, and hummingbirds eat nectar. There is simply no need to complicate this simple program, presented in perfection by nature in thousands of examples.

All of the creatures that are anatomically and physiologically like us known as the ***anthropoid primates***. Gorillas, orangutans, chimpanzees, and ***bonobos*** (previously called the pygmy or dwarf chimpanzee) thrive exclusively on a low-fat diet that is predominated by fruits, vegetables, nuts, and seeds.

There is not one example of an animal with anatomy and physiology similar to ours that consumes grain.

99% of their diets consist of plant. Their caloronutrient ratios is:

80/10/10 (80% carbohydrates, 10% protein, 10% fat).

Bonobos, our closest genetic "cousins," are considered the most intelligent (after humans). They consume mostly fruit and eat about 5 % of their calories as vegetable matter. The anthropoids that are farthest from us are mountain and lowland gorillas, rely mostly on vegetation and eat approximately 70% of fruit as they have limited access because their great weight makes it impossible to climb the skinny branches of trees to procure fruit. In zoos, they eat a diet predominated by fruit. Although many people are surprised to

hear it, that ***anthropoid primates*** in the wild eat a diet that is made up primarily of fruits and vegetables. We have never heard that chimpanzees or orangutans – which are typically five times stronger than humans, pound for pound – need more ***protein*** than the amount they get from their plant – based diet.

***

Are We Starch Eaters?

Starches can be divided into three general categories: ***roots, tubers, legumes, and grains (grass seeds).***

Starchy Roots and Tubers

Without tools, humans are very poor diggers. Food below ground that, in their natural state, very few exist that our digestive systems can even handle. Some roots, notably turnips, rutabagas, sweet potatoes, yams, beets, carrots, parsnips, and salsify can be eaten raw, though in practice today, next to none are eaten this way.

Legumes

Very few creatures other than birds and pigs readily consume legumes, as legumes in their mature state are indigestible or toxic to most mammals. For humans, raw mature legumes are
not just unpalatable, they are quit toxic. We simple have no capacity for consuming them in their natural state. While young legumes are edible and nontoxic, one must question their nutritional makeup. Legumes are touted as excellent sources of protein, and their protein content is generally quite high.

High protein levels are not necessarily a good thing, however, especially for humans, who seem to thrive best on a diet composed of less than 10% of calories from protein. As it is in flesh, diary, and eggs, the protein in legumes is rich in the amino acid methionine, which contains high amounts of the acidic mineral sulfur.

Carbohydrate levels of legumes are also high enough to make them difficult to digest due to the high protein levels. The lack of vitamin C, an essential nutrient for humans, also makes legumes a very poor food choice.

Vegetables

Humans do consume green leafy plants such as lettuce, celery, spinach and the like, as well as the tougher cruciferous vegetables (beets, broccoli, cauliflower, cabbage, collards, kale, and others). Eaten plain, as they occur in nature, these tough vegetables are high in insoluble fiber and therefore difficult for us to digest.

All vegetables yield proteins, some essential fatty acids, mineral matter, vitamins, and some simple sugars. But if we get enough of these nutrients from our natural foods, then these are not needed from plants that we do not eat raw with keen relish. Though we include vegetables in our diets, we're not primarily vegetable eaters by nature.

"The Staff of Death"

There is NOT ONE example of an animal with anatomy and physiology similar to ours that consumes grain.

Creatures that naturally eat grains, which are the seeds of gras-ses, are called "granivores."

Grain-eating birds possess a "crop," a pouch in their throats or gullets, where the grains they swallow whole are allowed to germinate, thereby becoming digestible. Grains are indigestible raw, but even cooked, the ***complex carbohydrates*** in them require great digestive effort to break down.

Most of the human race presently consumes grains and starches, we can reject them as natural human fare. The fact that grass seeds neither attract

these complex-carbohydrate foods in their natural state are a torture some affair. To fully digest starchy foods – grains, roots and tubers, and legumes – an animal must produce large quantities of starch-digesting enzymes (amylases).

The human body produces salivary amylase (also called ptyalin) of extremely limited strength and in relatively low amounts, sufficient only to break down small amounts of starch, such as would be found in fruit that is not fully ripened. The body also produces small quantities of pancreatic amylase for somewhat limited starch digestion in the intestines.

After Harvesting

Grains lose nutritive value once harvested, and they lose even more when milled to flour. In storage, grains are subject to infestations of insects, rodents, and molds. To prevent these problems and provide us with grains year around, farmers and food processors resort to the use of an array of toxic chemicals and preservatives.

Toxic Chemicals in the Grains

Modern grain farming has resulted in the loss of almost all of our topsoil. What was six to sixteen feet of topsoil a century ago, it has been reduced to six inches or less on most of our farms. In a world where potable water has become a commodity, over half of the total water used in the United States goes to watering livestock or feed for livestock.

The following is a partial list of toxic chemicals used in the processing of grain. How much residue from these chemicals remains in the grain itself, versus how much is simply dumped in concentrated form onto our soil is of little consequence.

Mercury
Cyanide
Ammonium salts
Chlorine

(Each of the above, in high enough doses, can cause insanity or even death.)

Fluorine - Mineral oil - Aluminium
(These are high-potency toxins)

The toxins of war – including chemical weapons such as chlorine, mustard, and the organophosphates, explosives such as nitrates, and radioactive waste – have all been incorporated into the human diet.

Listing of Grains

Barley
Oats
Tritical (a hybrid of wheat and rye)
Rye
Wheat

Wheat has several names and varieties. Bulgur, semolina, spelt, frumento, durum (also spelled duram), kamut, einkorn, farina, couscous, seitan, matzoh, matzah and matzo.

***Alternative grains*:** These are the grains (they're not really all grains, but people call them that).

Amaranth – Buckwheat – Mesquite – Millet – Montina
Quinoa – Sorghum – Teff – Rice – Wild Rice

"The Staff of Life"

We have learned since childhood that grains are the "staff of life." What, really, is a "staff"? It is a stick, pole, or rod traditionally used as a support or crutch. Grains, like any crutch, become detrimental to us when we rely on them constantly, three meals per day. Instead of thriving, we are weakened by

their continual usage. ***Is it possible that our beloved grains are actually crippling us?***

Does Grain Eating Come Naturally?

People are experiencing severe cravings for refined grain products. When starches are consumed, people wake up the next day and go through unpleasant periods of feeling foggy, hung over, or sedated. Should they stop consuming grains, symptoms of detoxification and withdrawal emerge. It is best to avoid substances that result in such powerful dependencies, whether we choose to call them drugs or food.

The consumption of grains, and any other foods that do not suit our design, is a serious step down nutritionally. Coupled with the habit of cooking, a food adulteration not practiced by any other species, the outcome is nutritionally bankruptcy.

Jared Diamond notes what ***wheat, rice, and corn alone provide most of the calories consumed by humans today,*** and that each of these is lacking in certain vital nutrients we need to exist.

"The Staff of Death"

Cereals, breads, pastries, pastas, pretzels, pizza crust, and other grain-based foods lose much of their original food value during refinement and other processing to make the grains edible. Even cooking a food counts as a refining process, as not only are the nutrients compromised, but antinutrients are created and water is driven off. No cooked food is a whole food.

Vitamins, minerals, carbohydrates, proteins, fats, enzymes, coenzymes, antioxidants, and phytonutrients are damaged, deranged, or destroyed by the heat of cooking. What does remain after cooking are the calories. Therefore, when we eat starches, we consume the maximum number of calories with the minimum amount of nutrients.

Dr. Emmet Densmore, author of How Nature Cures, one of the first to speak out against grains, pointed out that humans are fruitarian and declared bread to be "the staff of death."

A substance known as phytic acid, found in raw cereal grains, is well known for its tendency to bind with calcium and interfere with its absorption. Grains also contain substantial quantities of acid-forming minerals, such as phosphorus.

During the process of digestion, the body must yield up calcium from the bones, a powerful alkaline mineral, in order to neutralize the acidity of grains. Eventually, people on a high-grain diet run predictably low on calcium, often resulting in a common bone-thinning condition known as osteoporosis.

Grains contain very little calcium, and they are also low in sodium, choline, iodine, sulfur, and other alkaline minerals. On the other hand, fruits and vegetables contain from ***ten to one hundred times as much calcium*** and other alkaline minerals as do grains, when measured in terms of calories.

Does it ever seem peculiar to you that dog and cat food commercials stress the fact that optimum nutrition gives your pet the best chance of growing well and living healthfully?

Why, do you ask, are children's foods marketed instead of their colors, shapes, and exciting flavors, but rarely for their nutrient quality? Why are adult foods promoted for their convenience, but seldom for their health - building qualities? Why are these food commercials invariably followed by commercials for anti-acids? Do you ever wonder?

Fiber

The fiber in grains must be considered a health destroyer. Humans have delicate digestive systems. Just look at the number of people with digestive problems: nine out of ten in the United States. Our digestive systems require

the soft, soluble fiber found in fruits and tender vegetables. Grain's fiber, however, is coarse and sharp like finely ground glass. Nutritionists refer to it as insoluble fiber. It acts as an irritant in our system. Irritation of the mucosa of the intestine is considered a risk factor in many different diseases, including ulcers, diverticulosis, spastic colon, celiac disease, Crohn's disease, colitis, irritable bowel syndrome, and colon cancer.

The presence of insoluble fiber in the intestines causes food to move through the bowels more rapidly than normal, reducing nutrient absorption. Coupled with the irritating quality of insoluble fiber, this rapid movement of foods leads to malabsorption syndromes, nutritional deficiencies, and overall loss of health. In the production of refined flour, bran is left over. This flavorless and bowel-irritating waste product is then sold, at an inflated price, as if it were a health food.

Digestion

The human digestive system is complex, sophisticated, and highly sensitive. Food must be broken down into simpler molecules to be absorbed; this is digestion. Chemical digestion, directed by the brain, happens in three major areas; the mouth, the stomach, and the small intestine. This digestive action is dependent upon receptors that send messages to the brain, telling it which type of food is being worked upon.

The brain then responds accordingly, sequentially utilizing a barrage of water, digestive enzymes, enzyme precursors, coenzymes, electrolytes, acids, bases, buffer salts, hormones, extrinsic (vitamin B12) and intrinsic (mucoprotein) factors, and other secretions far beyond the capabilities of our greatest chemists to understand. Chemical digestion begins in the mouth with the secretion of amylase, a starch-splitting enzyme.

Stomach acid neutralizes the amylase and effectively stops starch digestion. It resumes in the small intestine. Protein digestion is purely mechanical in the mouth and nonexistent in the intestines. Proteins are broken down from long to short chains in the stomach, in the presence of hydrochloric acid.

When starches are consumed without proteins, the acidity of the stomach approaches neutral, allowing starch digestion to continue. ***When proteins are consumed with starches,*** the acidity of the stomach becomes as strong as is humanly possible, thus fostering proteolysis. The pH of the mouth and intestines are also capable of varying from mildly alkaline to mildly acidic, though predominantly alkaline, at about 7.4, is considered healthiest.

Herein lays the problem: when proteins and starches are consumed at one meal, the body is asked to provide two opposing chemistries in the same place at the same time. This cannot work, because they effectively cancel each other out. The result is impaired or partial starch digestion and impaired or partial protein digestion. The digestion process takes longer than it would to digest either substance on its own, and it requires considerably more energy to do so.

Since animal protein contains no fiber, they pass through the digestive system more slowly than other foods. At one hundred degrees, in a dark, wet environment, undigested meat will go bad (rot) rather rapidly. The partial digestion of meat that occurs when it is eaten with grains very often accounts for the putrefaction so obvious when feces are expelled. Grains do not tend to putrefy. They do, however, ferment.

Fermentation results from the mixture of sugar and starch, for example, in a raisin bagel, fruit pie, or dessert after a starchy meal. Two products result from the fermentation of grain: alcohol and gas. Alcohol quickly penetrates the gut lining and becomes blood alcohol, giving rise to the phrase “food drunk”. Drivers have actually failed Breathalyzer tests for blood alcohol simply from the alcohol produced in their digestive tracts!

Alcohol is a protoplasmic poison, meaning that it destroys every cell with which it comes into contact (the lining of the mouth and digestive tract are spared this fate, because they are coated by a protective mucosal layer). The production of alcohol within the gut is never a good thing, as it is absorbed into the bloodstream where is does its usual damage.

Energy

Upon consuming your starch meal, your body must perform many complex processes to utilize what is left after cooking, which is, primarily, only the calories. Before cooking, we refer to these calories as complex carbohydrates, an indigestible form of sugar made palatable through the application of heat.

During cooking, chemically referred to as caramelization, some starches are broken down into simpler sugars. The digestion of starch, however, is energy intensive and make take anywhere from thirty-six to seventy-two hours. This immediate, high energy demand, coupled with delayed energy return, explains why so many people feel lethargic after a starch meal. All available energy is being used for digestion.

Starches are touted as low-calorie foods. If we subtract the calories requires during the processes of digestion, the net energy gain is low. It is the fat we put on our starches that provide the really big calories, exactly the opposite of what more people desire. The digestion of fruit is a relatively simple process. What we refer to as “ripening” is actually the fruit converting starchy, complex carbohydrates into sweet-tasting, simple carbohydrates.

In effect, the fruit is digesting itself for us. The digestion of fruit demands considerably less energy than the digestion of starches, freeing energy for other processes such as organ and muscle functioning. Fruit, which must be worked upon for minutes in your stomach and eighteen hours in you intestines, yields more energy per calorie consumed than starches, which can require as many as twelve hours in you stomach and three days in your system.

Health Problems

The list of health problems associated with eating grains is long. Asthma, allergies, celiac disease gluten intolerance, digestive disturbances, mucous and congestive conditions, yeast infections, several types of arthritis, several

types of autoimmune disease, and even chronic overeating are all linked to the consumption of grains. Congestion, asthma, and allergies are of special concern to us. They hinder breathing, alter the clarity and tone of the voice, cause us to quickly become tired, and interfere with social interactions. Many sufferers of nasal congestion, asthma, and allergies are pleased to discover that their symptoms are relived once they embark upon a starch-free diet.

Cooked grains have little flavor on their own. Commonly, we add flavoring agents such as salt, heated fats or oils, refined sugar, artificial sweeteners like aspartame (a known neurotoxin that causes cancer, brain damage, neurodegenerative diseases, and birth defects) or powerful spices to make grains more palatable. These condiments are health destroyers and bring with them to the table an array of health problems.

Gluten Sensitivity

Many research studies link diets high in complex carbohydrates to negative health conditions. The gluten-containing grains primarily wheat, but also rye, barley, and oats, contain at least fifteen opioid sequences, which are strongly addictive, morphine-like substances that have potent psychoactive properties and produce serious

neurological disorders, nausea, constipation, urinary retention, vomiting, cough suppression, and other symptoms.

Gluten intolerance (celiac disease) contributes to or causes a wide range of other diseases,

including asthma, arthritis, chronic fatigue, Crohn's disease, Type 2 diabetes, depression, eczema, fibromyalgia, irritable bowel syndrome, migraines, lymphoma, and gastrointestinal cancer.

Gluten intolerance may also be linked to autism, schizophrenia, and several autoimmune disorders.

www. Enterolab. com Writes

"Gluten, a protein found in many grain products, has been named as a causative factor in psychoses and neurological disorders. It has been proven to chemically contain fifteen different opioid sequences, or morphine-like molecules. Opioids that come from outside the body are called ***"exorphins."*** It is called by scientists addictive and neurotoxic.

Since the mid-1960s, scientists have repeatedly linked gluten consumption to learning disorders and schizophrenia.

More info. "http://www.drritamarie" *www. drritamarie*. com

Physical effects of opioid consumption include nausea, sedation, truncal rigidity, euphoria, dysphoria, and miosis (papillary contraction). Opioids are known to interfere with our neurotransmitter chemistry, cause various types of epilepsy, and result in digestive disturbances such as constipation, urinary retention, biliary spasm, reduced production of ADH (an antidiuretic hormone that results in reduced urine production), slowed gastric emptying, and slowed digestion."

Are Grains Addictive?

Some addictions are easier to spot than others. People with eating disorders say they experience problems with starches, and especially the starches we call sweets or pastries. Could most of us be "starchaholics"? With a belly full of starch, most people are capable of no more than lying down and falling asleep in front of the television. It is common for people to become torpid after a holiday meal, sometimes falling into a stupor, full of breads, stuffing, potatoes, and a pastry or two. These reactions to a heavy starch meal are the typical reactions experienced by "users" to narcotics. Most Americans eat starch a minimum of three times daily at meals, and another two or three or more times as snacks. We were trained to eat starch as infants, since before we developed the enzymes to digest it.

Athletic Performance

A major issue of concern for athletes is acid/alkaline balance. In health, our bloodstream always remains alkaline, maintained at approximately 7.4. If the pH of the blood changes even two-tenths of a point, you will likely die. The minerals in starchy foods, however, are acidic: chlorine, sulfur, and phosphorus. Consumption of starches drains our alkaline reserves, resulting in lowered performance possibilities.

One starchy food leaves the digestive system and enters your bloodstream, acids enter the blood. Fortunately, your body maintains a reserve of calcium, its most alkaline mineral, plus several buffer systems to neutralize the acids in the event that the lungs, liver, and kidneys fail to keep pace with your acid creation and/or intake. The phenomenon of bicarbonate flowing into your bloodstream to neutralize acidity after meals is referred to as the "alkaline tide."

Most doctors consider the alkaline tide to be normal to our physiology, the flip side of the intense acid production needed from our stomach in a vain effort to digest animal protein. Since animal proteins are also dense with acid minerals, normal metabolism must be delayed while the emergency threat to the blood pH is addressed. This delay results in a reduction of performance potential with each occurrence.

A Weighty Issue

Your blood sugar rises, gently and almost instantaneously, upon eating fruit, supplying your every cell with its only source of fuel: simple sugar. The brain monitors blood sugar, and when blood sugar rises, appetite drops. It is almost impossible to overeat on fruit. Many people comment that they feel satisfied and full, often for the first time in years, after eating a relatively small quantity of fruit. Our bodies convert any extra complex carbohydrate calories to fat. Starch consumption, however, does not result in loss of appetite. On the contrary, it is easy to over eat them. We over eat pizza or pasta every time. Since blood sugar does not rise, the only way one feels satiated is to eat

until stuffed. It is likely there would be no obesity problems if the people of the world ate fruit instead of grains.

Sprouted Grains

What about sprouted grains? They are raw, so do they still count as grains?" Yes, sprouted grains still count as grains. They lack of vitamin C complex, a predominance of acid minerals, extremely low levels of the soluble fiber we need, a high concentration of complex carbohydrates, and so forth. Sprouted grains are exceptionally quick to grow mold.

The only thing that sprouted grains have going for them is that they are not cooked. Increasing the percentage of whole, fresh, ripe, raw, organic foods in your diet will yield you huge health and performance benefits. And as an added bonus, you will find yourself less dependent on grains. It is easy to see that the grain-free diet is not radical; It is truly ultraconservative.

Instead of grain try to eat fruit.

Become the next person to go against the grain and reap the harvest of health.

Grains for the Birds

Dr. Douglas N. Graham

In brief, the objections to grains and grain products as foods suitable to the human system are

They are deficient in a number of important nutrients.

They contain substances to some degree poisonous to the system.

They must be cooked in order to be digested which process further depletes their value and increases their pathological effect.

They place strain on the digestive system causing hypertrophy of the pancreas and unnecessary depletion of enzyme reserves while at the same time resulting in flatulence.

They are capable of damaging the intestinal villi, causing them to atrophy.

They are acid-forming in the body, often to the extent of causing them to atrophy.

They are capable of causing allergy reactions such as dry skin, subcutaneous cysts, exacerbation of multiple sclerosis and schizophrenia.

They are antagonistic to the body's immune system and increase susceptibility to head colds and other infections.

They are the worst causative factor in tooth decay due to their tendency to readily ferment between the teeth, so producing the acid which destroys tooth enamel.

They are totally unsuitable for infants, causing in some cases permanent damage to their digestive organs.

Of all foodstuffs, they contain the highest levels of calcareous salts which gradually accumulate in the tissues and cells, including the arteries, to accelerate the process of aging.

Apart from antagonizing the digestive system and providing inadequate nutrition, they are absolutely tasteless and unappealing to the senses, being rendered edible only by cooking and artificial flavor.

This Food Robs Your Brain Power

Avoid it for Clearer Thinking

By Dr. Joseph Mercola

Wheat and other glutinous grains are probably the worst starches to consume, in terms of metabolic impact versus micronutrient benefit, and many are heavy in toxins.

Most people will need some starchy carbohydrates for optimal health; the optimal amount appears to be about 20 to 30 percent of your total caloric intake, or approximately 200 calories per day for the average person. The most important consideration is that your carbohydrate sources are as organic and unprocessed as possible, free of pesticides and chemical additives, and not genetically modified. Studies now demonstrate that your child's diet has a direct impact on his or her cognitive function, and that both quality and quantity of carbohydrates are important. Grains should represent a small part of your diet, regardless of your age. Except amarath, quinoa and buckwheat. But if you're going to eat some grain-based foods, how much is too much? This debate heated up earlier this year when two nutritional experts, Dr. Paul Jaminet and Dr. Ron Rosedale, engaged in a debate over how many starches are too many.

Dr. Rosedale believes there is no such thing as a "safe starch" and that all starchy carbohydrates should be avoided, which of course includes all grains.

Dr. Jaminet, on the other hand, is a little more forgiving of some of the "safer starches," such as potatoes and rice. He believes some people need a small amount of these in their diets. If you have time, I do recommended your reading through all of it to see the nuances of their contrasting views. The amount of carbohydrates one should consume for optimal health is a widely controversial topic. Fortunately we can gain some insights as to how much we might need by examining a child's diet, which is critically important for proper brain development. As you would expect, the quality of a child's diet will directly affect his or her cognitive functioning. Two recent studies highlight just how important this is.

STUDY #1: In the first study, Japanese researchers analyzed the relationship between breakfast staples and intelligence in children. They divided 290 healthy children into three groups according to their breakfast staple—rice, bread, or both. What they found was that children in the rice group had significantly more gray matter in their brains and showed a higher perceptual organization index, which is a component of intelligence. This supports the theory that children's breakfast choices affect their cognitive function.

According to the study:

"... [O]ne possible mechanism underlying the difference between the bread and the rice groups may be the difference in the glycemic index (GI) of these two substances; foods with a low GI are associated with less blood-glucose fluctuation than are those with a high GI."

STUDY #2: A 2011 cross-sectional study in Tehran, Iran, examined the relationship between long-term refined carbohydrate intake and non-verbal intelligence among 6 to 7-year-old schoolchildren. Researchers found that refined carbohydrate consumption and non-verbal IQ were inversely related for these Tehrani children. In other words, the more refined carbs the children were eating, the lower their non-verbal IQs. So how much starch is too much starch for breakfast—or any other meal, for that matter?

My Personal Experience with an Ultra-Low Carb Diet

After trying both approaches, my experience suggests that Dr. Jaminet's position is more clinically relevant. The challenge is that most people will not be able to lower their carb level to the below 20 percent suggested by Dr. Rosedale. This very low level is a long reach from the average American diet, which is actually around 50 percent carbohydrate—it is simply too hard. Achieving Dr. Jaminet's far more carb-liberal recommendations will be enough of a challenge for most.

When I eliminated all my grains and starchy vegetables, I actually experienced some negative effects. My energy levels declined considerably, and my cholesterol, which is normally about 150, rose to over 200. It appears I was suffering a glucose deficiency and this can trigger lipoprotein abnormalities. It also seemed to worsen my kidney function. So, while carbohydrate restriction is a miracle move for most people, like most good things in life, you can overdo it.

This information really underscores how important glucose is as a nutrient, and some people can't manufacture glucose from protein as well as others, so they need SOME starches in their diet or else they will suffer from metabolic stress. About half of your proteins have glucose attached to them, and if they don't have glucose, they simply don't work well, if at all. Your body needs glucose both as a substrate and as a fuel in order for these proteins to work

well. If you drop below 200 calories of glucose per day, you might notice some negative consequences in the way you feel and even in some of your blood work, as I did. My experience now shows me that I need to have some source of non-vegetable carbs. I still seek to avoid nearly all grains, except for rice and potatoes. I typically limit my total carbohydrate calories to about 25 percent of total daily intake, and my protein to about 15 percent, with the additional 60 percent coming from healthful fats like butter, egg yolks, avocados, coconut oil, nuts and animal fat.

However, that is what works for me. You must listen to YOUR body and perform your own experiment. The bottom line is how your body responds, and you're the ONLY one who can determine that. So, if you are going to try eating some grain-based foods, which ones are the least likely to cause a problem? How damaging is wheat versus rice? Or potatoes? Before casting a vote on this, it is important to understand how grains contain different amounts and types of natural toxins that can create problems with your health.

Avoid Carbs that are Loaded with Toxins

Aside from providing excessive calories as carbohydrates, one of the major adverse consequences of most grains is that they are loaded with toxins. In fact, as you'll learn in the interview above, the average person gets about 1.5 grams of natural food toxins daily, which makes up more than 99.9 percent of all the toxins ingested. These are toxins made by plants, as opposed to manmade toxins, which serve to protect the plant from being eaten by mammals. The one grain type that is virtually toxin free is white rice, which has far fewer toxins than brown rice.

The vast majority of toxins in white rice are destroyed by cooking, which is why white rice is the only grain Dr. Jaminet recommends. One of the grain toxins with which you may be familiar is gluten. "Gluten" comes from the Latin word for glue, so named because its adhesive properties hold bread and other baked goods together. Gluten is present in grains such as wheat, rye, and barley. The glue-like properties interfere with the breakdown and absorption of nutrients, including the nutrients from other foods in the same meal. The result is a sticky, constipating lump in your gut, rather than a nutritious, easily digested meal.

This undigested glutinous gut-bomb may trigger your immune system to attack the lining of your small intestine, causing diarrhea or constipation, nausea, and/or abdominal pain. Severe reactions are classified as "celiac disease," and milder reactions fall under the category of "gluten intolerance." Over time, your small intestine can become increasingly damaged and less able to absorb nutrients, such as iron and calcium.

This in turn can lead to anemia, osteoporosis and other health problems. Modern wheat (and other grains) differs greatly from the wheat our ancestors ate. The proportion of gluten protein in wheat has increased enormously as a result of hybridization. Legumes are also loaded with lectins, which is why most who follow a Paleo type diet avoid them.

Lectins: The Plant Kingdom's Weapon of Mass Destruction

Lectins are carbohydrate-binding proteins that are widespread in the plant kingdom. Plants produce lectins to ward off their natural enemies, such as fungi and insects. However, lectins are not just the nemesis of fungi and insects, but are also plaguing humans. Please refer to the excellent video above by Chris Meletis, ND, who discusses the many dangers posed by these glycoproteins.

There are many types of lectins

Some lectins (including those in wheat) bind to specific receptor sites on your intestinal mucosal cells and interfere with the absorption of nutrients across your intestinal wall and into your blood. So, they act as "antinutrients." Lectins are proteins that are looking to hook up with carbohydrates in your body.

C-reactive protein, which is a marker of inflammation, is one example of the many lectins you have circulating right now. Lectins are also used to determine blood type. Lectins trigger inflammation, stimulate a hyper-immune response, and increase your blood viscosity—all conditions that can predispose you to disease.

Wheat Lectin (WGA) is Cytotoxic, Neurotoxic, Cardiotoxic and Immunotoxic

Wheat lectin, or "wheat germ agglutinin" (WGA), is largely responsible for many of wheat's pervasive ill effects. WGA is highest in whole wheat, especially sprouted whole wheat, but wheat isn't the only grain with significant lectin. All seeds of the grass family (rice, wheat, spelt, rye, etc.) are high in lectins.

WGA has the potential to damage your health by the following mechanisms (list is not all-inclusive):

* Pro-Inflammatory: WGA lectin stimulates the synthesis of pro-inflammatory chemical messengers, even at very small concentrations

* Immunotoxic: WGA lectin may bind to and activate white blood cells

* Neurotoxic: WGA lectin can pass through your blood-brain barrier and attach to the protective coating on your nerves, known as the myelin sheath. It is also capable of inhibiting nerve growth factor, which is important for the growth, maintenance, and survival of certain neurons

* Cardiotoxic: WGA lectin induces platelet aggregation and has a potent disruptive effect on tissue regeneration and removal of neutrophils from your blood vessels

* Cytotoxic (Toxic to cells): WGA lectin may induce programmed cell death (apoptosis)

Research also shows that WGA may disrupt endocrine and gastrointestinal function, interfere with genetic expression, and share similarities with certain viruses.

The following foods contain chitin-binding lectins, which are very similar to wheat lectin: * Barley * Rye * Tomato

Chitins are the primary binding target of wheat lectin; therefore, wheat lectin and chitin-binding lectin are functionally identical. This could be important information if you are struggling with celiac disease or other gastrointestinal issues. For a complete understanding about chitin-binding lectins, please read this article by Sayer Ji.

If You're Sugar Sensitive, Beware of the SWEET Potato

Although sweet potatoes have some excellent nutritional components and are considered a "safe starch" by Dr. Jaminet, many people have problems from eating them because of their high fructose content. Dr. Jaminet actually recommends white potatoes over sweet potatoes. There are many different varieties of sweet potato, all varying in sugar content.

The American sweet potato has been literally bred for sweetness. If you are trying to tease out the nuances of your potential carbohydrate foods, it's worth noting the differences in the varieties. The American sweet potato has nearly half the sugar content (6.5g per 100g) of grapes (15.5g per 100g). They are sort of half fruit, half starch! By contrast, yams are far less sweet, with only 0.5g of sugar per 100g. White potatoes actually contain more sugar than yams, at 1.2 g.

The Bottom Line

My conclusion is that there is a certain minimum carbohydrate threshold that you should not drop below. The sweet spot for most is 20 to 30 percent of your diet as carbs, but most likely 25 to 30 percent. Most of those calories can come from non-starchy vegetables, but you'll probably need some starchy carbs, such as white potatoes or white rice, and starchy vegetables like carrots and squash.

Breast milk is considered by many to be the perfect food for infants. Breast milk is 40 percent carbohydrate, which is great for babies because they have an increased glucose demand related to their rapid brain development. Adults simply need less.

Regardless of which starchy foods you put on your plate, make sure they are as organic and unprocessed as possible, free of pesticides and chemical additives and NOT genetically modified. I believe that low toxicity, high quality nutrient-dense foods are the MOST important consideration for you and your child's optimal health, as well as your child's brain development. Regardless of your dietary choices, please remember to ALWAYS listen to your body, as it will give you feedback about whether or not the approach you've chosen is right for your unique biochemistry and genetics. Listen to that feedback and adjust your program accordingly.

For more information on this topic, you can follow the still-ongoing discussion between Dr. Rosedale and Dr. Jaminet in the Perfect Health Diet: Safe Starches Symposium.

By Dr. Joseph Mercola

Eating Grains Can "Tear Holes" in your Gut

Story at-a-glance

Grains contain anti-nutrients and lectins that can damage your gut, and humans did not consume them until relatively recently in biological time. We're often told that whole grains are healthy, but the high-fiber bran portion of grain -- the part that makes it a whole grain -- actually contains many of the anti-nutrients.

There is a size able body of scientific evidence showing that grains, as well as legumes, contain anti-nutrients that may increase intestinal permeability and cause leaky gut and associated symptoms. Eliminating grains (and sugars) from your diet, while introducing traditionally fermented foods, can help prevent leaky gut as well as other chronic health conditions.

Leaky gut is a condition that occurs due to the development of gaps between the cells (enterocytes) that make up the membrane lining your intestinal wall. These tiny gaps allow substances such as undigested food, bacteria and metabolic wastes,that should be confined to your digestive tract, to escape into your bloodstream -- hence the term leaky gut syndrome. Once the integrity of your intestinal lining is compromised, and there is a flow of toxic substances "leaking out" into your bloodstream, your body experiences significant increases in inflammation. Also, your immune system may become confused and begin to attack your own body as if it were an enemy (autoimmunity). Most often, leaky gut syndrome is associated with inflammatory bowel diseases like Crohn's and ulcerative colitis, or celiac disease, but even healthy people can have varying degrees of intestinal permeability leading to a wide variety of health symptoms -- and this can be influenced heavily by the foods you choose to eat.

Grains Contain Anti-Nutrients

In the United States, we're told that grains (especially whole grains) are an important part of a balanced diet, necessary for obtaining our daily requirement of healthy nutrients and fiber. However, according to a growing number of experts, including Dr. Loren Cordain, a professor at Colorado

State University and an expert on Paleolithic lifestyles, humans are NOT designed to eat grains, and doing so may actually be damaging to your gut.

Dr. Cordain explains:

"There's no human requirement for grains. That's the problem with the USDA recommendations. They think we're hardwired as a species to eat grains. You can get by just fine and meet every single nutrient requirement that humans have without eating grains. And grains are absolutely poor sources of vitamins and minerals compared to fruits and vegetables and meat and fish."

Ironically, since we're often told that whole grains are the best for our health, the high-fiber bran portion of grain – a key part that makes it a *whole* grain -- actually contains many of the anti-nutrients.But the problem isn't only that there are superior sources of nutrients; grains actually contain *anti-nutrients* that may damage your health.

Dr. Cordain states:

"Grains are the seeds of a plant. They're its reproductive material, and plants don't make their reproductive material to give away for free to other animals. If they did they'd become extinct, and so the evolutionary strategy that many plants, particularly cereal grains have taken to prevent predation is to evolve toxic compounds so that the predator of the seeds can't eat them, so that they can put their seeds in the soil where they're meant to be to grow a new plant and not in the gut of an animal to feed it."

Whole Grains - Increase Intestinal Permeability

There is a growing body of scientific evidence showing that grains, as well as legumes, contain anti-nutrients and other problem substances that may increase intestinal permeability. This includes:

Gliadin

Gliadin is the primary immunotoxic protein found in wheat gluten and is among the most damaging to your health. Gliadin gives wheat bread its doughy texture and is capable of increasing the production of the intestinal protein zonulin, which in turn opens up gaps in the normally tight junctures between intestinal cells (enterocytes). In celiac disease the body will make antibodies to gliadin after it is digested by the intestinal enzyme tissue transglutaminase, resulting in severe autoimmune damage to the delicate, absorptive surfaces of the intestines. It does not, however, require full blown celiac disease to suffer from the adverse effects of this protein. In fact, it is likely that our intolerance to gliadin and related wheat proteins is a species-specific intolerance, applicable to all humans, with the difference being a matter of the degree to which it causes harm. This helps to explain why new research clearly shows gliadin increases intestinal permeability in both those with, and those *without,* celiac disease.

Lectins

Lectins are a key mechanism through which plants protect themselves against being eaten, and are found in highest concentrations in their seed form -- which makes sense, considering that seeds are the plants' "babies" and whose survival ensures the continuation of their species. When animals consume foods containing lectins, they may experience digestive irritation, along with a wide range of other health complaints. The degree to which the adverse effects are expressed depends largely on how long that species has had to co-evolve with that particular form of plant food it is eating. Since humans have only been consuming unsprouted grains and beans in large amounts for approximately 500 generations, we still suffer far more than certain rodents and birds, who have had thousands of generations longer to adapt to this way of eating. We are mostly exposed to lectins from grains, beans, dairy products and nightshade plants, such as potato, tomato, and chili peppers. However, bread wheat (*Triticum aestivum)* has a prominent role to play in lectin-induced adverse effects, due to the fact that it is a relatively new form of

wheat, and contains wheat germ agglutinin (WGA) – a particularly resilient and problematic lectin, considering it is not eliminated through sprouting and is actually found in *higher concentrations* in whole wheat.

Studies indicate that it has the potential to contribute to a wide range of adverse health effects, including gut inflammation and damage to your gastrointestinal tract:

Pro-inflammatory--WGA stimulates the synthesis of pro-inflammatory chemical messengers (cytokines) in intestinal and immune cells, and has been shown to play a causative role in chronic thin gut inflammation.	**Immunotoxicity**--WGA induces thymus atrophy in rats, and anti-WGA antibodies in human blood have been shown to cross-react with other proteins, indicating that they may contribute to autoimmunity. In fact, WGA appears to play a role in celiac disease (CD) that is entirely distinct from that of gluten, due to significantly higher levels of IgG and IgA antibodies against WGA found in patients with CD, when compared with patients with other intestinal disorders.
Neurotoxicity-- WGA can cross your blood-brain barrier through a process called "adsorptive endocytosis," pulling other substances with it. WGA may attach to your myelin sheath and is capable of inhibiting nerve growth factor, which is important for the growth, maintenance, and survival of certain target neurons.	**Excitotoxicity**-- Wheat, dairy, and soy contain exceptionally high levels of glutamic and aspartic acid, which makes them all potentially excitotoxic. Excitotoxicity is a pathological process where glutamic and aspartic acid cause an over-activation of your nerve cell receptors, which can lead to calcium-induced nerve and brain injury. These two amino acids may contribute to neurodegenerative conditions such as multiple sclerosis, Alzheimer's, Huntington's disease, and other nervous system disorders such as epilepsy, ADD/ADHD and migraines.
Cytotoxicity—WGA has been demonstrated to be cytotoxic to both normal and cancerous cell lines, capable of inducing either cell cycle	**Disrupts Endocrine Function**—WGA may contribute to weight gain, insulin resistance, and leptin resistance by blocking the leptin

arrest or programmed cell death (apoptosis).	receptor in your hypothalamus. It also binds to both benign and malignant thyroid nodules , and interferes with the production of secretin from your pancreas, which can lead to digestive problems and pancreatic hypertrophy.
Cardiotoxicity—WGA has a potent, disruptive effect on platelet endothelial cell adhesion molecule-1, which plays a key role in tissue regeneration and safely removing neutrophils from your blood vessels.	**Adversely Affects Gastrointestinal Function** by causing increased shedding of the intestinal brush border membrane, reducing the surface area, and accelerating cell loss and shortening of villi. It also causes cytoskeleton degradation in intestinal cells, contributing to cell death and increased turnover, and decreases levels of heat shock proteins in gut epithelial cells, leaving them more vulnerable to damage.

As we noted earlier, the highest amounts of WGA is found in whole wheat, including its sprouted form, which is touted as being the most healthful form of all ... The traditional ways of addressing many of these anti-nutrients is, in fact, by sprouting, fermenting and cooking. However, lectins are designed to withstand degradation through a wide range of pH and temperatures. WGA lectin is particularly tough because it's actually formed by the same disulfide bonds that give strength and resilience to vulcanized rubber and human hair.

The Sugar in Cereals Marketed to Kids

One of the most common ways we consume grains is in the form of cereal, many of which are marketed to kids and adults alike as "health foods." But cereal is anything but healthy, not only because of the grain it contains but also because many (particularly those for kids) contain excessive amounts of sugar.

A new report from the Environmental Working Group (EWG) revealed that many popular children's cereal brands contain more sugar than snack cakes and cookies. For instance, one cup of Kellogg's Honey Smacks, which is

nearly *56 percent sugar* by weight, has more sugar than a Twinkie, while a one-cup serving of 44 other children's cereals analyzed contain more sugar than three Chips Ahoy! cookies. If you need a recap of why sugar is a health disaster, you can find one here. However, as it pertains to leaky gut, you should know that sugar, like grains, can upset the balance of bacteria in your digestive tract, encouraging damage to your intestinal lining that can lead to leaky gut. So, sugary children's cereals are a double-edged sword, assaulting your fragile gastrointestinal tract with both damaging sugar and grains. Please do your kids a great favor and offer them a healthier breakfast instead.

Are Grains Causing Your Leaky Gut Symptoms?

This Food is the "Antidote"

As you might suspect, leaky gut can cause digestive symptoms such as bloating, gas and abdominal cramps, but it can also cause many others, such as fatigue, skin rashes, joint pain, allergies, psychological symptoms, autism and more. It's a vicious cycle because once your digestive tract has been damaged, it allows various gut contents to flood into your bloodstream where they wreak havoc on your health. The key to preventing this lies in altering your diet to eliminate the offending foods -- including sugars and grains -- as well as introduce healthier ones that will support a proper balance of bacteria in your gut. To restore gut health, and prevent leaky gut from occurring, eating traditionally fermented foods is essential.

Dr. Natasha Campbell-McBride explains:

"Fermented foods provide probiotic microbes in the best possible form … fermented foods will carry probiotic microbes all away down to the end of the digestive system. Fermentation predigests the food, making it easy for our digestive systems to handle, that is why fermented foods are easily digested by people with damaged gut. Fermentation releases nutrients from the food, making them more bio-available for the body: for example sauerkraut contains 20 times more bio-available vitamin C than fresh cabbage."

On Dr. Campbell-McBride's web site you can find recipes for many traditionally fermented foods, including sauerkraut, yogurt, kefir, kvass and more. If you regularly eat fermented foods such as these that have not been pasteurized (pasteurization kills the naturally occurring probiotics), your healthy gut bacteria will thrive. If these foods do not make a regular appearance in your diet, or you've recently taken antibiotics, a high-quality probiotic supplement will help give your gut bacteria the healthy boost it needs. Once your gut flora is optimized, your leaky gut should improve naturally. As Dr. Cordain explains: "

… when we have a healthy flora of bacteria in our gut, it tends to prevent leaky gut."

Is a Return to the Paleo Diet Right for You?

During the Paleolithic period, many thousands of years ago, people ate primarily vegetables, fruit, nuts, roots and meat—and a wide variety of it. Today, these staples have been largely replaced with refined sugar, high fructose corn syrup, cereal, bread, potatoes and pasteurized milk products… and a much narrower selection of fruits, vegetables, roots and nuts. This is precisely the recipe for a leaky gut, and all of its associated health problems, which is why simply returning to a Paelo diet by eating foods that are concordant with your genetic ancestry may help you become healthier. This includes focusing on whole, unprocessed foods including vegetables (except corn and potatoes) and free-range organic meats, while avoiding sugars and grains.

As Dr. Cordain states:

"The nutritional qualities of modern processed foods and foods introduced during the Neolithic period are discordant with our ancient and conservative genome. This genetic discordance ultimately manifests itself as various chronic illnesses, which have been dubbed "diseases of civilization." By severely reducing or eliminating these foods and replacing them with a more

healthful cuisine, possessing nutrient qualities more in line with the foods our ancestors consumed, it is possible to improve health and reduce the risk of chronic disease."

The Popular Zombie Food

Wheat and dairy products are not foods but drugs.

Dr. Mario Piper MD.

Wheat- and dairy products contain opioid peptides influencing endorphin receptors in the brain. These peptides are physically addictive, causing dependence, asthma, obesity, apathy, ignorance and numbness.

The same goes for beta-carbolines from prepared food. To be sharp and investigative, you ought to consume neither dairy- nor wheat-products. You don't need those 'foods' at all.

To obtain all required nutrients and to remain sharp and investigative; consume as much fruits (there are about 6000 different fruits), vegetables, salads, lots of greens and nuts.

Opioid Peptides

Why do so many people act like zombies nowadays ?

What makes so many people so apathetic, slow and ignorant ?

Everybody knows that if one uses morphine, one is slow and apathetic. Simply because morphine is an opioid substance. The only reason why we, and other animals, are sensitive to such substances, is because our body and brain contain receptors for opioid peptides. Why ?

When we have to flee from danger but are wounded, we have to be able to run away anyway. Therefore the body produces opioid peptides to ease the pain, when necessary. These opioid peptides are called endorphins. Marathon-runners know the action of these endorphins as 'runner's high' ; it enables them to go on even when exhausted. Without the proper receptors, these endorphins (and anesthetics !!) don't work.

Besides drugs and endorphins, opioid-receptors in the brain are susceptible to some other opioid substances: those that are absorbed through consuming food. This happens because far from all peptides are entirely decomposed into single amino acids in the digestive tract. **(1)** Also, most opioid peptides are hard to decompose. **(2)**

Wheat

Plants use different tactics to scare off attackers. Some plants contain poison, others just anaesthetize their attackers, like wheat does with opioid peptides. Because wheat contains opioid peptides, priests in ancient Egypt used wheat to hallucinate, and in bandages, to ease the pain of a wound.
All wheat-products, like bread, pasta, pizza, cookies, cake and pastries contain opioid peptides. The roman rulers already new that the people wouldn't rise against them as long as they were entertained and fed bread.

Opioid peptides in wheat-products

One single wheat-gluten protein-molecule contains 15 samples of one particular opioid peptide. **(10)** Wheat-gluten also contains a number of extremely powerful opioid peptides **(11)**. Some of these molecules are even 100 times more powerful than a morphine-molecule. **(12)**

Opioid peptides in wheat-gluten are ;
Glycine-Tyrosine-Tyrosine-Proline **(11)**
Tyrosine-Glycine-Glycine-Tryptophane **(11)**
Tyrosine-Proline-Isoleucine-Serine-Leucine **(11)**
Tyrosine-Glycine-Glycine-Tryptophane-Leucine **(13)** ,which is the most powerful one.

Tyrosine-Glycine-Glycine- is also the sequence of the first three amino acids in endorphins ; opioid peptides produced by the body, influencing the same receptors in the brain.

Therefore, wheat-opioid peptides can 'sedate' the bowels so much that constipation is caused. **(13)** Because some wheat-opioids are extremely powerful, some schizophrenics can even be cured by not eating any wheat-products anymore. **(14)**

To compensate the analgesic effect of the opioid peptides, wheat-products very often contain rosemarin-extract, which is a powerful 'upper'.

Brainfood

If you want to be sharp, fast, and able to focus up to 24 hours a day, you've got to stop consuming milk- and wheat-products. Eat foods that stimulate your brain. Fruits (there are about 6000 different fruits), vegetables, salads, lots of greens and nuts. ***Wheat- and dairy-products are not foods but drugs.***

Milk

Milk is always***, always*** mother's milk, meant for the suckling. We decided to consider mothers' milk from cows, goats, sheep, camels, or from whatever other animal as food for human beings, but by nature this, of course, it isn't

true. Why do we use cow's milk as food for human beings.

Economics

When humans migrated to areas where less fruits could be found, it was necessary to find other foods. Economically, it appeared to be more efficient to repeatedly take milk from the cattle than to slaughter them for meat. Where the least fruits could be found (Northern Europe), humans best adapted to consuming cow's milk; colored people are far more allergic to cow's milk-proteins and / or lactose than white people. But why does milk contain opioid peptides ? These opioid peptides cause physical dependence in the young, to make sure it wants to drink lots of mother's milk. Also, it makes the young sleep enough.

From womb to breast milk

The human head is relatively big, and that's why human infants come out to the world too early ; in comparison to other primates gestation length should be 21 months instead of 9. But by then the baby's head would be far too big to pass the pelvis. That's why human infants actually aren't ready for the outside world; they can't even walk ! Suckling is a compensation for being born too early.

Through mother's milk the baby receives all kind of messenger-substances. These messenger-substances stimulate development and functioning of different organs, including the brain. *(see* this site*)* Therefore, children that have been nursed are generally smarter than those that haven't. *(see* this site*)* And because mother's milk is that important, it contains substances that have to make sure the baby wants to drink lots of milk all the time ;

Opioid peptides in Milk

Besides a non-opioid peptide stimulating appetite **(3)**, milk by nature contains different opioid peptides, hidden in milk-proteins such as caseïn, lactalbumin, beta-lactaglobulin and lactoferrin. Milk-opioid peptides are : beta-casomorphins **(4)** , alpha-caseïn exorphins, casoxins, beta-casorphins, alpha-lactorphins, beta-lactorphins and lactaferroxins. **(5)**

Absorption

After having consumed a milk-product, it is digested in the digestive tract. Milk-proteins are decomposed by enzymes into normal peptides, opioid peptides and amino acids. To make sure the baby absorbs as much complete opioid peptides and growth factors, milk also contains substances (lactose, substance P) enhancing permeability of the intestinal mucus. **(6)** And to prevent the decomposition of the peptides, these peptides are relatively indigestible. **(7)**

These opioid peptides cause physical dependence in the young, to make sure it wants to drink lots of mother's milk. Also, it makes the young sleep enough. **(8)** Of course, these opioids can also cause constipation. **(9)** Unfortunately, adult milk-consumers also absorb those opioid peptides. Because food-manufacturers want us to be physically dependent to the food they sell, you can find milk- and wheat-proteins in lots of different food-products. Even some meat-products contain milk- and / or wheat-proteins.

Milk causes schizophrenia, autism, and other diseases

Dr. David Jockers

Dairy products are one of the most common foods consumed around the world. Some cultures survive on diets consisting of up to 80% raw cow, goat, &/or sheep milk. In the western world, however, dairy has become one of the most inflammatory foods. A recent discovery shows that a genetic shift in the casein molecule has produced a powerful toxin linked to numerous disorders and diseases.

Milk contains two primary protein molecules: whey and casein. Casein makes up about 80% of the protein in the milk. Casein is made up of 209 amino acids strung together in sequence. The 2 primary forms of casein are: A1 Beta Casein and A2 Beta Casein. These 2 are nearly identical in structure except for the amino acid at position 67. A1 contains histidine while A2 contains proline.

The bond between histidine and its linked amino acids is much weaker and much more easily broken than the bonding of proline in A2. This splitting happens during the digestive process and creates a peptide called beta casomorphin 7 (BCM7). BCM7 is an opioid, which gives it morphine-like qualities. This creates rampant oxidative stress in the gut and blood stream.

BCM7 is a 7 amino acid peptide that is resistant to degradation. It takes very strong immune responses to break this molecule down effectively. This immune response often takes place in the gut and causes digestive distress and leaky gut syndrome. The most susceptible individuals are those who already have digestive problems and infants who naturally have increased intestinal permeability.

When BCM7 passes into the bloodstream, it is able to cross through the blood brain barrier. In the brain, it can bind to opioid receptors and cause symptoms of schizophrenia, autism, and other mood and neurodevelopmental issues. Research performed on rats has shown autistic and schizophrenic type behavioral changes after the rats were injected with BCM7.

A1 beta casein and its byproduct BCM7 have also been linked to cases of type I diabetes, digestive disorders, neurodegenerative disorders and heart disease. These issues have the most supportive evidence linking them to A1 beta casein. This does not mean that A1 beta casein isn`t associated with other health disorders as well.

Avoiding A1 Beta Casein:

It can be quite challenging to enjoy dairy products and avoid A1 Beta Casein in the western hemisphere. You certainly have to look for specific breeds of cow that will not be labeled at the grocery store. A1 beta casein is produced by cattle belonging to the Bos Taurus subspecies, which is the primary breed of cattle in the western hemisphere. The Guernsey breeds produce only about 10% of their beta casein as A1 while the Jersey breed produces about 35%. The Ayrshire, Holstein, and Frisian breeds tend to produce 50% or more.

Goats do not produce A1 beta casein making their milk and dairy products. The `land of milk and honey` that was described in the bible is thought to be a reference to raw, goat milk and raw honey. Raw milk from grass-fed animals without A1 beta casein has a number of amazing health benefits due to the healthy omega 6:3 ratios, conjugated linoleic acid, and other immune

supportive properties.

Organic butter from a grass-fed cow is still very healthy regardless of the breed of cow because it contains little to no protein. Research has found that cheese, yogurt, and fermented milk products from A1 beta casein containing breeds produce around the same amount of BCM7 as regular milk. These products should only be consumed from breeds of cow that produce very little A1 beta casein or none at all.

[Editor`s Note: NaturalNews is strongly against the use of all forms of animal testing. We fully support implementation of humane medical experimentation that promotes the health and wellbeing of all living creatures.]

http://naturalbias.com/a1-beta-case...

http://www.betacasein.org/

http://thebovine.wordpress.com/2008...

About the author

Dr. David Jockers owns and operates Exodus Health Center in Kennesaw, Ga. He is a Maximized Living doctor. His expertise is in weight loss, customized nutrition & exercise, & structural corrective chiropractic care. For more information go to www.exodushc.com To find a Maximized Living doctor near you go to www.maximizedliving.com

Learn more:

http://www.naturalnews.com/033384_A1_beta_casein_milk.html#ixzz1VmJPVSEJ

Sources

(1) Meisel, H. ,Frister ,H. in : Barth, C.A.& Schlimme, E., Milk Proteins : Nutritional, Clinical, Functional and Technological Aspects. Darmstadt 1988 / 143. **(2)** Svedberg, J.et al, Demonstration of beta-casomorphin immunoreactive materials in in vitro digests of bovine milk and in small intestine contents after bovine milk ingestion in adult humans. Peptides 1985 / 6 / pag.825-830. , Loukas, S. et al, Opioid activities and structures of alpha-casein-derived exorphins. Biochemistry 1983 / 22 (19) / 4567-4573. , Zioudrou, C. et al ,Opioid peptides derived from food proteins. The exorphins. J. Biol. Chem.1979 / 254

(7) / 2446-2449. **(3)** Flood, J.F. et al, Increased food intake by neuropeptide Y is due to an increased motivation to eat. Peptides 1991 / 12 (6) / 1329-1332. , Koldovsky, O., Search for the role of milk borne biologically active peptides for the suckling. J.Nutr. 1989 / 119 (11) / 1543-1551. **(4)** Teschemacher, H. et al, Chemical characterization and opiod activity of an exorphin isolated from in vivo digests of casein. FEBS Lett. 1986 / 196 (2) / 223-227. , Chang, K.-J. et al, Isolation of a specific mu-opiate receptor peptide, morphiceptin, from an enzymatic digest of milk proteins. J. Biol. Chem. 1985 / 260 (17) / pag. 9706-9712. **(5)** Teschemacher ,H. et al, Milk protein-derived opioid receptor ligands. Biopolymers. 1997 / 43 (2) / 99-117. **(6)** Bell, R.R. et al, The influence of milk in the diet on the toxicity of orally ingested lead in rats. Food and Cosmetics Toxicology 1981 / 19 / 429-436. , Lembeck, F. et al ,Substance P as neurogenic mediator of antidromic vasodilation and neurogenic plasma extravasation. Arch. Pharmacol. 1979 / 310 (2) / 175-183. **(7)** Read, L.C. et al, Absorption of beta-casomorphins from autoperfused lamb and piglet small intestine. Am. J. Physiol. 1990 / 259 (3 pt 1) / G443-452. **(8)** Koldovsky, O., Search for the role of milk borne biologically active peptides for the suckling. J.Nutr. 1989 / 119 (11) / 1543-1551. , Buts, J.P. Bioactive factors in milk. Arch. Pediatr. 1998 / 5 (3) / 298-306. **(9)** Iacono, G. et al, Intolerance of cow's milk and chronic constipation in children. New England Journal of Medicine 1998 / 339 (16) / 1100-1104. **(10)** Fukudome, S. et al, Release of opioid peptides, gluten exorphins by the action of pancreatic elastase. FEBS Lett. 1997 / 412 (3) / 475-479. **(11)** Fukudome, S. et al, Gluten exorphin C : a novel opioid peptide derived from wheat gluten. FEBS Lett. 1993 / 316 (1) / 17-19. **(12)** Max ,B., This and that : an artefactual alkaloid and its peptide analogs. Trends Pharmacol. Sci. 1992 / 13 (9) / 341-345. **(13)** Fukodome, S. et al, Opioid peptides derived from wheat gluten : their isolation and characterization. FEBS lett. 1992 / 296 (1) / 107-111. **(14)** Dohan, F.C. ,Genetics and idiopathic schizophrenia. Am. J. Psychiatry 1989 / 146 (11) / 1522-1523. , Dohan, F.C. ,Genetic hypothesis of idiopathic schizophrenia : its exorphin connection. Schizophr. Bull. 1988 / 14 (4) / 489-494. , Paroli, E. et al, Opioid peptides from food (the exorphins). World Rev. Nutr. Diet. 1988 / 55 / 58-97. , Morley, J.E., Food peptides. A new class of hormones ? J. Am. Med. Assoc. 1982 / 247 (17) / 2379-2380 , Ross-Smith, P. et al, Diet (gluten) and Schizophrenia. J. Hum. Nutr. 1980 / 34 (2) / 107-112.

Wheat-Free Diet Simple Explained

Wheat allergy is an abnormal immune system response to one or more of the four proteins found in wheat, including albumin, globulin, gliadin and gluten. Wheat allergy is most commonly seen in children, especially those with an immature immune or digestive system, and is usually outgrown before reaching adulthood. Additionally, individuals with a family history are at an increased risk for an allergy to wheat. Wheat allergy is sometimes confused with celiac disease, which is a digestive disorder that creates an adverse reaction to the gluten found in wheat, rye and barley. Don't assume that you have celiac disease unless a diagnosis has been confirmed by your doctor.

Symptoms

The symptoms of a wheat allergy reaction can range from mild to severe and often occur within a few minutes to a few hours of eating a wheat-containing food.

Mild symptoms may include the following:

Swelling, itching or irritation of the mouth or throat
Hives, itchy rash or swelling of the skin / Nasal congestion
Itchy, watery eyes / Difficulty breathing
Cramps, nausea or vomiting / Diarrhea
On rare occasions, allergic reactions may result in anaphylaxis, which requires immediate attention and symptoms include:
Constriction of airways
Shock and a severe drop in blood pressure / Rapid pulse
Dizziness or loss of consciousness

Diagnosis

Your doctor may use a combination of tests to confirm a wheat allergy. Specific tests or diagnostic tools may include:

Skin test – A skin prick is used to expose small amounts of the protein to

your body. A food allergy is confirmed by the presence of a raised bump or hive at the prick location.

Blood test – A blood test, also referred to as an IgE test, measures your immune system's response to the proteins found in soy by counting the number of specific antibodies in your blood.

Food diary: You are asked to maintain a detailed record of everything you eat, noting if symptoms are experienced.

Elimination diet: The offending food is eliminated from the diet. Then, under the direction of your doctor or a registered dietitian, you will gradually add these foods back into your diet and note if/when symptoms return.

Food challenge testing: Following ingestion of gradually increased amounts of the suspected food allergen, you undergo careful supervision for a few hours or days to determine if any allergy symptoms occur.

Survival Skills

The only treat treatment for a wheat allergy is avoidance of wheat and wheat-containing foods. While some wheat-containing foods are obvious such as bread, cereal and pasta, wheat protein also appears in many foods as an additive.

Common sources of wheat:

Breads
Breakfast cereals
Pasta
Cakes and muffins
Couscous
Crackers
Beer
Hydrolyzed vegetable protein
Soy sauce

Condiments, such as ketchup or salad dressing
Meat, crab or shrimp substitutes
Coffee substitutes
Meat products, such as hotdogs
Dairy products, such as ice cream
Natural flavorings
Gelatinized starch
Modified food starch
Vegetable gum

Label Reading:

Label reading is critical to following a wheat-free diet. The FDA mandates the labeling of foods that contain the eight major food allergens, which includes wheat. Remember to read the label thoroughly each and every time you purchase a product, even if you purchase it regularly, as ingredients change from time to time. If you are unable to determine if the product contains wheat, contact the manufacturer or a Weis Markets registered dietitian for this information.

Wheat in Disguise:

Read labels carefully and look for these words:
Bread crumbs
Bulgur
Cereal extract
Couscous
Durum, durum flour, durum wheat
Emmer
Einkorn
Farina
Flour (all wheat types, such as all-purpose, cake, enriched, graham, high protein or high gluten, pastry)
Kamut
Semolina

Spelt
Sprouted wheat
Triticale
Vital wheat gluten
Wheat (bran, germ, gluten, grass, malt, starch)
Whole-wheat berries

Foods you CAN EAT with a wheat allergy:

Barley
Corn
Oat
Quinoa
Millet / Very sparingly but better to be avoided!
Rice
Rye
Tapioca
Buckwheat
Potato

Eating Out:

Always take extra precaution when dining in restaurants or eating foods prepared by others. Order simple dishes prepared with fresh foods. Avoid foods that may have hidden sources of wheat proteins, such as sauces that often have multiple ingredients or deep-fried foods that may be cooked with other foods containing wheat. When in doubt about any product or dish, don't eat it. Be sure to ask detailed questions about ingredients and how the food was prepared – your health and safety are at stake!

Don't Go it Alone

A new diagnosis can be scary. Be sure to build a support of family, friends and healthcare professionals to help you manage your wheat allergy. Talk to a doctor or dietitian when eliminating these foods from

your diet. They may recommend an adjustment in your meal plan or a supplement to replace nutrients lost by eliminating the offending food and food ingredients. Also talk to your doctor about how to prepare for a reaction.

You may treat a mild reaction with oral antihistamines to reduce signs and symptoms and relieve discomfort. If you are at risk for severe reactions or anaphylaxis, your doctor may advise you to wear a medical alert bracelet and/or prescribe an injectable epinephren (EpiPen) to carry with you at all times.

Additional Resources

American Collage & Academy of Allergy, Asthma and Immunology

http://www.aaaai.org / http://www.acaai.org

Asthma and Allergy Foundation of America

http://www.aafa.org

The Food Allergy & Anaphylaxis Network

http://www.foodallergy.org

The Food Allergy Initiative http://www.faiusa.org