

SPEZZATINO SECOND HELPING

# GRAINS, GUTS & GROK

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**OK, YOU'VE GOT  
YOUR IPHONE WORK-  
OUT APP, YOUR BLUE  
GATORADE AND  
YOUR GÜ PACKET.**

You've slapped on your \$200 running shoes, your heart rate monitor, and your smart-fibre fabric. You just popped a vitamin pill. You're ready to get healthy! Right?

Well, maybe not so much. You see, your body that you've just encased in innovative polymers and fed with astronaut-style rations is still 200,000 years old. (Don't worry, you look great. Just keep up with that wrinkle cream and tell everyone you're 199,999 for a few more years.) In the world of nutrition, the 20th century was all about finding space-age solutions. The 21st century, however, is taking us back to the good ol' rock and pointy stick.

As we learn more about our physiology and DNA, we're discovering that you can take the humans out of the ancestral savannah, but you can't take the savannah out of the humans... at least not for another million years or so. Research on evolutionary fitness and nutrition is helping us realize that our slow-changing physiology has yet to catch up to our new environments, and this mismatch can cause some serious health problems. We evolved to be free-scavenging, travelling omnivore primates who lived actively in the great outdoors, not desk monkeys in a cubicle zoo hunched under fluorescent light, eating donuts and swilling soda while worrying about the mortgage.

Robb Wolf is the author of *The Paleo Solution: The Original Human Diet*. Along with researchers such as Dr. Loren Cordain (author of *The Paleo Diet*) and Dr. Staffan Lindberg (author of *Food and Western Disease*), he's on the forefront of this new – uh, old – nutritional science that explores the ways in which understanding human evolution can help explain modern diseases and health problems.

One of the key findings in this research, explains Wolf, is that although agriculture is a pretty old human practice, our physiological makeup is much, much older – hundreds of thousands of years older, from the

survive the fantastic journey, grains make themselves a pain in the ass (so to speak).

“All grains employ similar strategies to survive,” explains Wolf, “or at least they did before we began harvesting and cultivating them. Grains use a variety of chemical defense mechanisms to prevent their consumption in the wild. These include anti-nutrients like phytates, which bind to minerals such as calcium, magnesium, iron and zinc. Grains also contain proteins that are rich in proline (an amino acid), which are hard to digest and tend to cause some degree of gut irritation (gluten is in this category). Finally, grains have protease inhibitors that block the digestion of proteins, including those gut-irritating, proline-rich proteins. Soaking or sprouting reduces these issues somewhat, but not completely.”

## GRAINS DO NOT LIKE BEING EATEN.

Paleolithic period. We haven't even evolved fast enough to tolerate the products of Neolithic farmers who began sticking seeds in the ground only about 10,000 years ago... never mind the elaborate technical innovations of modern-day food manufacturers. This means that most of us don't yet have the machinery to properly digest grains.

The key to understanding why, says Wolf, is to think about how grains work. Grains do not like being eaten. For a seed such as a grain, a trip through an animal's digestive tract is a diversion from the real business: spreading one's genetic material. In order to prevent themselves from being consumed, and/or to ensure they

### RICE INTOLERANCE?

Let's look more closely at how all of this works. Wheat gluten can cause serious intestinal problems in susceptible people. The proteins in gluten disrupt the delicate cell lining of the GI tract, causing local damage to the gut as well as systemic inflammation as the body responds to the perceived threat. Many doctors recommend rice to people who are dealing with an initial diagnosis of gluten intolerance/ celiac disease and trying to figure out how to make dietary substitutions with familiar foods.

Wolf agrees that people are increasingly aware of gluten intolerance, and learning more about how wheat consumption affects health. “If you look in Google Trends, the term ‘gluten free’ is poised to surpass searches on ‘vegetarian’. That's a lot of searches and it represents a lot of burgeoning awareness about gluten intolerance.”

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Yet Wolf proposes going one step further. “The funny thing to me is that it took ages to get people to buy into the notion that gluten might be really bad for some people, likely bad for most everyone in fact.” Now that everyone is on board, he says, rice is often proposed as a substitute. “But rice is botanically a cousin of gluten-containing grains! Rice has the same chemical defense systems all grains have and we do, in fact, see a celiac-like intolerance to rice in many people.” Thus, rice may not always be such a safe substitute, because it may cause the same problems as other grains such as wheat.

Wolf points to a study in a pediatric medical journal, for instance, that describes four case studies of infants with rice intolerance. Symptoms included shock, vomiting, and diarrhea. When the babies didn’t eat rice and flour, they were symptom-free; when rice was re-introduced in a double-blind experiment (in which both researchers and study participants were blinded to whether foods contained rice), the severe shock returned, and researchers found “histological alterations in the intestinal mucosa” – in other words, the same GI tract and

immune system damage and inflammation found with celiac and gluten intolerance.

Over ten years after the study Wolf cites, other researchers found that cases of enterocolitis cause by rice intolerance in children were nearly as common as milk intolerance – yet, troublingly, more severe than milk intolerance. A quick review of the clinical literature suggests that doctors have been aware of rice-based intolerance since at least the 1950s.

“Now, I do think rice is generally more benign than gluten-containing grains,” acknowledges Wolf, “but it’s just orders of magnitude. I first came to this observation when I was moderating a very popular celiac site. All of these people would migrate to the site with a celiac diagnosis, start eating other grains and legumes, and get somewhat better. But frequently they started sliding downhill again with similar symptoms that alerted them to the gluten intolerance and insulin resistance in the first place. These people were not thriving on a rice diet, and this observation was consistent with what I knew about grains in general and Paleo nutrition.”

## MINERAL ABSORPTION

Another problem with grains in general, including rice, is their effect on minerals. Elsewhere in this issue, we look at the nutritional differences between brown and white rice. On paper, brown rice scores much higher than white rice in its nutrient content: a cup of brown rice contains 8% of our required daily allowance for zinc; 10% of our RDA for copper; 21% of our RDA for magnesium, 27% of RDA for selenium, and a whopping 88% of our RDA for manganese. It’s also got small amounts of calcium, iron, and potassium. Sounds pretty good, right?

Not so fast, says Wolf. There is a difference between whether a food contains particular nutrients and we actually *absorb* or use those nutrients (as we explored in *Spezzatino* Vol. 1, *Tomatoes*, in an article on lycopene). Substances in rice known as phytates bind to these minerals and not only prevent us from absorbing them, but also prevent us from absorbing minerals from other foods too.

“Phytates bind very tightly to minerals such as calcium, zinc, magnesium, and iron – to name just a few. In fact, phytates are used in analytical chemistry to quantify various metal

## GRAINS HAVE A NASTY 1-2-3 PUNCH WHEN WE CONSIDER MINERAL ABSORPTION.

ions, because phytates bind so tightly to them.

“Grains have a nasty 1-2-3 punch when we consider mineral absorption: first, they tend to damage the gut, making it tough to absorb anything; second, they bind to the very minerals we want to absorb: calcium, magnesium, zinc, iron, and so forth; third; they disrupt the absorption of other co-factors that enhance mineral absorption, such as vitamin D and vitamin K.”

“Now this is only important to you,” Wolf quips, “if you want healthy bones, a strong immune system, loads of energy and good health. Want to reverse osteoporosis or iron deficiency anemia? Remove grains and legumes (same story as grains), eat protein, veggies and good fats. Yep, that’s it!”

### THE STOP-GAP OF SOAKING AND SPROUTING

Many cultures have traditionally prepared grains by soaking, sprouting, and/or fermenting them before eating them. For instance, many African cuisines include fermented sorghum or maize porridges; East Asians fermented rice; Europeans fermented flours for sourdough breads.

This helps a bit, says Wolf. “Folks

developed this strategy to reduce the damaging effects of grain consumption. However, it does not fix all of it.”

Soaking, sprouting, and/or fermenting can help do damage control, “but if you have an autoimmune condition, inflammation or are trying to optimize performance, health or longevity I’d leave this for a ‘once in a while’ option.”

### IS GRAIN-FREE HEALTHIER?

Now wait just a minute, scientist guy. Weren’t early human lives (and, for that matter, early humans) nasty, brutish, and short? Well, the anthropological data says no. In fact, our hunter-gatherer ancestors were a hale and hearty lot, tall and fit, free of the chronic diseases that plagued their later agricultural descendants. If hunter-gatherers could survive falling out of trees, dying as infants, hitting each other in the head with rocks, or being eaten, they were actually in pretty darn good shape – not a heart attack or dental cavity to be seen, despite the lack of statin drugs and toothpaste, respectively. And they lived longer than you might expect.

This good health persists in isolated populations, such as the Trobriand population on the South Pacific island

of Kitava, who still live on ancestral, grain-free diets. These populations get their carbohydrates from fruit as well as starchy tubers, such as cassava, taro, or yams – not from grains or beans and legumes. Their blood work would make a cardiologist weep with joy, and in the case of the Trobrianders at least, even the old guys are buff enough to consider underwear modeling.

Normally, says Wolf, he likes to compare genetically similar hunter-gatherer and agricultural populations living in the same area of the United States. But since we’re talking rice, he pops over the Pacific to look at two ethnically related cultures that lived side-by-side but nutritional and cultural oceans apart: the Japanese and the Okinawans.

“The Okinawans were traditionally taller and healthier than the Japanese,” says Wolf, and along with language and social customs, “perhaps the most glaring feature that separated the two cultures was a relative lack of rice consumption on the part of the Okinawans, who consumed large amounts of fish, pork, and a starchy, nutrient-dense tuber like a yam. By contrast, Japanese relied heavily on rice as a staple. The anti-nutrients in the rice are at the heart of this differ-

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ence. This height disparity disappears when Japanese people move to the United States and consume less rice.”

The Okinawans are also, by the way, renowned for their longevity. In 1996, the average life expectancy was 81.2, compared to the Japanese 79.9. While rates of cancer in Japan are still relatively low, Okinawans have half the rates of breast, prostate, and colon cancer of the Japanese – an impressively scant occurrence indeed. While mainland Japanese have about 40% fewer hip fractures than Americans, Okinawans have about 20% fewer hip fractures than do mainland Japanese. Close to one-third of elderly people in both Japan and the United States suffer dementia by their 80s – while the Okinawan elders’ brains are sharp as tacks, with a dementia rate about 12% by 85. This is good, because Okinawans’ sex hormones are still bubbling too – a 100-year-old Okinawan male has the same testosterone level as a 70-year-old American male, while Okinawan women are sailing sweat-free through menopause.

Researchers in the Okinawa Centenarian Study are hard at work trying to figure out the Okinawans’ secrets. While genes make up part of the explanation, lifestyle and diet

remain very significant. For instance, Okinawans who moved to Brazil and began to eat a more conventional Western diet knocked 17 years off their life expectancy. Elderly Okinawans have “impressively young, clean arteries” free of atherosclerotic plaque, low cholesterol, and low homocysteine levels when compared to Westerners.

Is the lack of grain consumption responsible for the Okinawans’ success? Could avoiding grains keep you young forever? Well, first, it’s important to understand that humans eat food, not “nutrients”, and they eat complex foods in complex environments with unique social, cultural, and biological features. However, the evidence that grains may not be ideal for everyone is starting to add up.

Most of us would like to think of us as somewhat more evolved than our knuckle-dragging predecessors. It’s a blow to our ego to think that our physical evolution hasn’t kept pace with our social and technological evolution. However, the good news is that by learning to eat a diet that suits our physiology, we can reduce our risk of chronic disease, and achieve optimal health. Now, isn’t it time you turned off the computer and got outside, Grok?

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