



**FLUSH AWAY
DISEASE,
FAT AND
CHOLESTEROL**



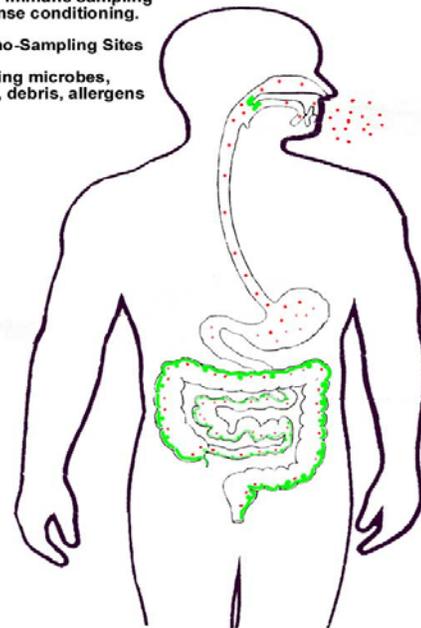
IMMUNOFIBER

By Greg Fox, Ph.D.



Figure 1a. Immune sampling and response conditioning.

- Immuno-Sampling Sites
- Incoming microbes, toxins, debris, allergens



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Preface/Revisit January 2010

I wrote this story about 10 years ago. I went out on a limb on some things, but time has only substantiated most of the hypotheses presented in this book. The fact that high viscosity barley beta glucan serves as an adjuvant like immune system activator has been widely substantiated in the succeeding 10 years. Wally and Adele Coram of NuWorld Nutrition have gone on selling the high viscosity (HV), high beta glucan (HBG), hot barley cereal (HBC) mail order with feedback substantiating the hypotheses in this book, as written and day to day verbal testimony from ordinary people, users of HBC. Some of these testimonials are included in the back of the book. They also continue to put out tasty recipes which include HBC. My wife Chris Fastnaught, a food nutritionist and cereal chemist gathered articles substantiating the effect of HBG barley on the immune system, Heart function (cholesterol reduction), and sugar regulation for diabetics; these, also, are at the back of the book. She submitted these studies to the FDA and they agreed that the evidence shows consuming barley lowers cholesterol. In 2006 they granted a Health Claim for barley foods that contain at least 0.75g of beta-glucan fiber/serving. A serving of the HBC provide 3g of beta-glucan fiber/day. It is still my belief that if this material (HV, HBG, barley) was used on a large scale by the general public – the benefit on human health would be enormous. The benefits are such that I believe that adding some sugar and or oil to make material more tasty would be beneficial for younger less health conscious people. They can burn off the fat and sugar, the benefits of the HV, HBG remain.

Surprise Visit December 2009

Recently I had the pleasant surprise of a visit from Doug Chapman who was part of the Starch Chemistry Group at Montana State University (MSU) lead by Dr Ken Goering (who is mentioned in the book), that worked on waxy hulless (The source of HV, HBG) This is the group I worked with from 1977 – 1981. I had not seen or heard from Doug since 1981. He has worked as a food industry specialist all these years. Doug was

surprised that I did not say more about Montana days in the book. So I thought that I'd use this opportunity to fill that in as it makes for an interesting story.

The Beginning (As I Remember It)

It all started in Montana some time after world war II when starch chemist Dr Ken Goering (MSU) went to the barley breeder Bob Eslick (MSU) and asked if he could make a waxy endosperm barley grain. Let me provide a note of explanation here. Starch granules (for all grains) are made of 2 molecules, soft branched amylopectin, and hard straight chained amylose, Waxy grain is made of 100% soft amylopectin starch granules and is a softer more digestible form of starch and grain. The reason it is called "waxy" is because a Christian missionary first saw waxy corn in China and thought the grain had a waxy appearance, the name stuck. The waxy starch is a natural occurring variant that occurs in all grains. Back to the story, During World War II the Japanese captured the East Indies which was the source of tapioca (for pudding) waxy corn starch could serve as a substitute. Dr. Goering thought barley starch would work just as good if it could be converted to the waxy form – Bob said it could, and the project began. Both men were thinking of this as value added crop that could be grown by the Montana farmer. These sorts of projects are part of the mission of land grant universities like MSU. So using standard natural breeding techniques Bob converted many popular Montana varieties to the Waxy form. One variety was the popular western 2 row barley variety Compana. Bob Converted it to waxy Compana called it Wa (waxy) Compana – Wapana The starch of Wapana worked as good or better than waxy corn starch, but Dr Goering came back to Bob and said that the barley hulls presented a processing problem. Let me make another note of explanation here. Barley like unlike most all the other grains has flowering glumes (little, grain enclosing stiff leaves) that are cemented to the seed. This is why barley for human food use is pearled to remove this harsh lignified fiber. These hulls were very hard on grinding machinery and elimination of this nuisance would improve the processing of Wapana. Dr Goering asked if there was a gene in barley that would allow the hulls to thresh free of the grain. Once again Bob said that the required trait occurred in barley in nature in

varieties in India and Germany. The Indian source had another gene associated with the Nude (nu) or hullless grain gene, that was the short awn (sho) characteristic. Another note of explanation The awn is an antenna like projection from the barley floret (actually a projection off one of the flowering glumes). Most varieties have long awns, the short awn gene is linked (semi loosely) to the hullless grain gene so it allowed farmers and researchers alike to identify hullless types in the field prior to harvest; they would have short awns. So using standard breeding techniques Bob created waxy (wa), short awned (sho) nude (nu) Compana – Washonupana.

My Arrival

By now World War II had ended long ago and interest in waxy barley had advanced from a western source of waxy starch to a source material for the production of high maltose barley syrup (like corn syrup). This is where I entered the scene in 1977 and met Professor Bob Eslick, who I worked for as a PHD graduate student, and Dr Ken Goering (really Bernice DeHaas, and Doug Chapman, who were Dr Goering's research staff). They were the people that I worked with on a daily basis, especially Doug. Bob put me in charge of the waxy hullless (nude) barley project. It was my PHD dissertation project. As it worked out the variety Washonupana produced starch that was so digestible that it degraded immediately with the addition of water. This was because of a naturally occurring starch digesting enzyme (Alpha Amylase) that occurs in all grains, but in Washonupana it appeared to attach directly to the starch granules. It was called self liquefying barley starch and patented by MSU. It was one of my jobs to find the cause of this effect. I spent a lot of time with Doug and Bernice working on this. The Crew at MSU was a very interactive bunch, and I got much help from many people. Dave Sands a plant pathologist developed a quick easy assay to measure alpha amylase. This opened a very big door for me. After much work using the famous blue plate special assay (BPS) we found that Washonupana had no more alpha amylase than anything else. But, we found that all waxy barley starch was very susceptible to enzymatic degradation even during routine starch extraction and purification procedures.

The Critical Juncture

In 1978 I met Sandy McGregor a noted Canadian cereal chemist who helped me by conducting isozyme analyses of a range of Compana isotypes including Washonupana. He found that there was no difference between Washonupana and any of the other isotypes. It appeared that the starch attachment that was some times observed was mainly due to the extremely digestible waxy barley starch. It was more digestible than the waxy starch of any of the grains. However, aside from this, Sandy noted that there were large quantities of viscous beta glucan in Washonupana far above what he had ever seen in normal barley. He also saw this effect in the waxy hulless isotype, Wanupana, but to a lesser extent. At about the same Doug Chapman who was doing the pilot scale high maltose syrup runs with Dr. Goering was finding unheard of levels of viscous beta glucan as soon as hot water was added to the Washonupana meal. the slurry set up as a viscous gel which stopped all processing. Doug was sure that it was beta glucan.

This is how it all started. Eventually the Goering group developed a process to convert the waxy starch to high maltose syrup and extract the protein, oil, insoluble fiber, and beta glucan. At first the Beta glucan was seen as commercial gum byproduct like guar gum or gum Arabic, not a clinical product. In my dissertation it was shown the 2 genes in concert (waxy and hulless) caused this beta glucan enhancement, with the short awn gene an enhancer. It was the interaction of these 3 genes that caused this remarkable effect (high quantities of viscous beta glucan). Dr Chuck McGuire (also a cereal chemist and part of the project) gave me a beta glucan viscosity/content assay via Dr Vic Bendelow of Agriculture Canada and Stacy Anderson (MSU senior project), that allowed me to do this work. I presented this work to the Barley Workers in Minneapolis in 1980, at that time Peter Wood a noted Oat cereal chemist (oats is the other cereal that has large quantities of beta glucan) told me that these beta glucans had clinical value in lowering serum cholesterol. They were valuable! Drs Walt and Rosemary Newman animal and human nutritionist who had worked with Bob on animal and human nutrition took over the clinical work. They have researched and written extensively on

the subject. The rest as they say is history. Between 1980 and the present there have been many contributors to this body of knowledge. I am just a small part. Doug's visit after almost 30 years was like going back in a time machine – and as we visited I was reminded of how unexpected, and unique the massive amounts of beta glucan extracted in the industrial processing really was back then. Doug described as a thick gel layer. They did not see this with regular hulled or hullless barley. It was truly unique. One of the early anecdotes from Montana is that from processing large quantities of barley beta glucan was isolated and dried. Talk was that Dr Goering used to put a teaspoon of this dried beta glucan in his coffee every morning and his Cholesterol went down by 40 points. I remember this as the first of many, many barley beta glucan testimonials.

As of this writing all the players I spoke of are still with us except Bob Eslick who passed in the late 80s (God bless him, but he smoked like a chimney) The cowboy cereal chemist Dr Goering is still rounding up cattle every spring in the high plains of Montana (as far as I know).

Greg Fox

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1. Introduction

Described within this book is a special food grain that has the ability to cure or alleviate every illness known to man. Sounds incredible, but true. Composed of normal barley but with two naturally occurring genes that coupled with proper environment, selection, and processing techniques yield a new grain and a new type of food. Indeed farmers that have grown barley all their lives do not recognize this as barley but rather some new grain. Technically this is called high viscosity, high β -glucan, waxy hulless barley. The active ingredient in this new grain is a form of soluble fiber called β -glucan that forms the cell walls of oats and barley. Waxy hulless, high β -glucan, high viscosity barley is unique in that high levels of free (unbound) intact (unbroken) β -glucan fibers are accumulated and upon milling they just tumble

Waxy Hulless Barley



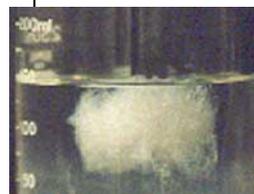
Normal Hulled Malt or Feed Barley



out of the seed into the flour or meal, existing as a very active form of β -glucan, which upon further processing can be easily concentrated or extracted. This cannot be done with normal barley or oats.

Upon consumption these intact β -glucan fibers create a viscous suspension that coats the intestines and regulates cholesterol, fat, and glucose uptake in a spectacular manner. However, this is a small but important part of what these intact β -glucan fibers do. They cleanse and activate the immunoreceptors of the intestinal wall (the major immunological organ of the body), conditioning a balanced immunological response to the millions of microbes and toxins that each of us

Intact β -glucan fibers from Waxy Hulless Barley suspended in ethanol.



Intact β -glucan in water creates the viscous suspension that coats the GI tract controlling fat, cholesterol and sugar absorption while activating the Immune system.



encounter every day. Based on this fact, there is no conceivable medical problem that these β -glucan fibers cannot alleviate or help to alleviate. The results can be

spectacular. Taken orally in a natural manner as a food or food additive, this material is totally effective in a safe and gently way. For the sake of simplicity we will call this new grain ImmunoGrain and the active ingredient ImmunoFiber.

In order to understand ImmunoGrain it is important to understand normal barley and its place in human history since it too has the same basic properties as ImmunoGrain but to a lesser degree. So the use of barley as a food from antiquity to the present will be explored, this gives us a real basis for understanding the functionality of ImmunoGrain. We will discuss the discovery and development of ImmunoGrain and ImmunoFiber and initial clinical observations. We will discuss the design and function of the human body as it relates to digestion, fat and cholesterol transport, immune response and regulation, and disease development with special emphasis on cancer, heart disease, autoimmune disease (arthritis, rheumatism, allergies), and the problems of aging, and how ImmunoFiber can alleviate or cure each of these problems with some case history illustrations. The remarkable thing is that all of these effects can be achieved for most people by consumption of just 1.5 to

A 1.5 to 3 oz bowl of ImmunoFiber cereal daily provides full clinical benefit for most people.



3 ounces of ImmunoGrain every day.

ImmunoGrain can be taken in many ways, but throughout this book, references will be made to a quick ImmunoFiber cereal that is much like oatmeal, but more active.

2. How ImmunoFiber Began

I have been working with waxy hulless barley (WHB) off and on for twenty-three years. Originally it was developed as a source of soft waxy (high amylopectin) starch, as a starting material for high maltose barley syrup, or as a quality animal feed. It was often noted when processing ground waxy hulless barley with warm water that a viscous mass was created. We found that this was due to the soluble β -glucan (natural barley cell wall fiber) which came into aqueous suspension. We did not see this effect in normal hulled barley and found that WHB had elevated levels of β -

glucan. In the 80's, oat β -glucan became prominent as the active ingredient in cholesterol-reducing oat bran. Since WHB contains this same material but in greater quantities, it was thought that it should function in a manner similar to oat, possibly even better. Much work has been done in this area by friends and associates from Montana State University, such as, Prof. Bob Eslick (my major professor), Dr. Ken Goering and Drs. Walt and Rosemary Newman showing that this is indeed the case. As time went on we also found that sugar absorption (useful for diabetes) was also controlled (reduced) by β -glucan. It appeared that both the regulation of intestinal sugar and fat (cholesterol) absorption was due to the viscous coating of the intestine that β -glucan might provide. Indeed it was found that non-viscous β -glucan could be totally lacking in functionality – so it was necessary to measure not just the β -glucan content of food but also viscosity. In 1994, I ran across an article by Dr. Peter Mansell that described β -glucan from microbial sources as natural immune stimulators. I contacted Dr. Mansell and had a discussion with him; I found out that microbial β -glucan was a well known immune stimulator. Dr. Mansell felt that cereal β -glucan such as those in oats and barley would not work in a similar manner. However, I soon discovered from recently published articles on the subject that they did. For me this was a watershed event. For almost 20 years I had been working with waxy hulless barley as a food or feed – and consistent anecdotes about the increased vigor of humans and animals consuming WHB seemingly unrelated to cholesterol or sugar regulation came to mind. Over the next 6 years I was to become more and more amazed at the full extent of the effect of viscous β -glucan from waxy hulless barley on the immune system and general health. It was much, much more than a cholesterol and sugar regulator. It was a sort of universal panacea; it was an ImmunoFiber.

Since barley was the bread grain of antiquity, I wondered if there might be a hint of the ImmunoFiber effect from antiquity throughout recorded human history. I found that this was very much the case with barley breads and beers largely regarded as tonical foods. I discuss this in the next 2 chapters which were meant to be both educational and entertaining.

3. The Bread of Life

Going back to antiquity, it is clear that barley is recognized as the bread of life, the grain from which not just sustenance but health is derived. H.E. Jacobs in Six Thousand Years of Bread *It's Holy and Unholy History* described barley in the ancient world:

“In these lands the strong-tasting, brownish-yellow grain of soldiers and peasants was barley. The heavy, consonantal names of this grain are descriptive of the grain’s quality: in Greek it is called *krithe*, in Latin, *hordeum*, in German Gerste.”

Hordeum translates to “of the gladiator” and *Gerste* loosely translates to “gusto”.

The Aryans who invaded and occupied the Indian subcontinent and the Himalayan highlands had a strong opinion that the grain they ate had much to do with their self image as energetic conquerors. Jacobs writes:

The peoples with whom Father Millet dwelt were never rich or warlike. The Mongol and Khirgiz nomads of Central Asia are to this day lovers of millet. In China we find it had been cultivated around 2800 B.C. In primitive India a great deal of millet was eaten. When the Aryan master race descended upon India, it decreed that the food of the subjected race would not do for the food of their men. The Aryans brought their own grain: *djavas*, barley. A contest of taste began from which *djavas*, the grain of soldiers and strong men, emerged as victor.

The fighting ration of the Homeric Greeks was barley paste cakes. This continued throughout Greece’s Golden age culminating in Alexander



From Homeric times to the conquest of Alexander the Great, Grecian armies marched on Barley cakes and water.

The Great’s conquest and hellenization of the ancient world. From the History of the

Peloponnesian War, by Thucydides, the rations of soldiers and sailors on Grecian triremes is described.

“They provided wine and barley cakes for the crew and promised great rewards if their ship should get there first. The crew ate and drank as they rowed and slept in turns.”

This same general attitude continued through antiquity to the time of Christ. When Jesus fed the multitudes with fishes and loaves, those loaves were barley loaves. To the common people, barley, not wheat bread, was the bread of life. H.E. Jacobs writes: “Since only rich people in Palestine ate wheat, barley being the grain of the poor, it is scarcely credible that Christ was wont to eat wheat. The miracle of the five thousand was certainly done with loaves of barley bread.”



Jesus feeds the 5000 with 2 fishes and 5 barley loaves.

We know that barley was the first bread of antiquity. In the ancient world barley was the bread of life. Light raised wheat bread was an indulgence for the rich. Again,



The Israelite's rolling into the Midianites camp like Barley cakes.

Jacobs writes:

“Barley was not well adapted for bread; it did not bake adequately. Barley had been admirably suited to the stage before the invention of bread, when men roasted flat breads. No sooner was bread discovered than barley fell off in importance and became the victim of snobbery. The Bible frequently mentions it in a deprecatory fashion. Nevertheless, it was barley that symbolized the strength of the people of Israel. Nowhere – not even in Homer – is there written so forcible a tribute to barley as in the Book of Judges, where an Israelite dreams of a cake

of barley bread tumbling into the Midianites camp and destroying all of Israel's enemies. "

For the common man, much of (almost all) the daily nutrition came from their bread. The bread was not an indulgence; it was a necessity ("give us this day thy daily bread" - the Lord's Prayer). Today we eat wheat bread despite many health problems associated with its sticky proteins. We do this because of sensory, not health factors. It's an indulgence. However, getting back to Antiquity. When wheat bread first started to appear in the diet of the affluent, it was immediately noted that their general health declined. This trend was repeated everywhere, Greece, Rome,

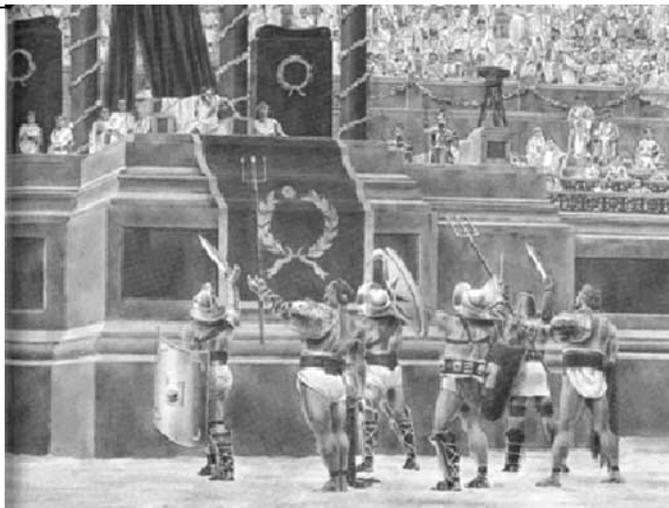


For Caesars legions Barley was the tonical food.

Egypt, Persia, Europe – as wheat replaced barley and other grains (rye, oats) in bread. The luxury of eating airy wheat bread was an indulgence of the rich who had access to other food. But to the less affluent that needed nutritional bread, it was a luxury that came at a price of reduced vigor and greater susceptibility to disease. Up until the present century, most bread was produced in the home or local bakeries and mixed grain breads were the rule, heavy, nutritious mixed grain breads. Barley, oats and rye were the main grains along with some wheat. It is interesting to note that the supplemental healthfully nutritious grains

used with wheat are all β -glucan bearing grains (barley, oats and rye). However, barley was always the cornerstone. Indeed, the Roman army that marched across and conquered most of the world marched on a diet of mixed whole grain bread and very often little else. The Roman army that conquered the world was running for the most part on a vegetarian diet (mixed grain breads of which barley was a prominent component). However, when a particular Roman Legion was not performing well and lacked strength and vigor it was put on a diet of straight barley until it regained strength. This was not viewed so much as a punishment but as a tonical cure for whatever ailed them. Indeed, if you talk to an Iranian farmer who uses donkeys for labor, he'll tell you the same thing. The cure for a sluggish donkey is a straight diet of barley. Indeed, the very name of barley (scientific Latin name) *Hordeum vulgare*

Roman Gladiators “They eat only Barley.”



translates to “common gladiator food”. Greek gladiators and then the Roman gladiators that followed them, by choice, had a diet that consisted of no meat, and barley grain as the main food. They were known as the *Hordeii* or “barley eaters”. In ancient times anyone employed in this sort of life or death work would be

considered crazy to eat anything but barley. It gave them strength and vigor superior to common men, and even in their own times these were not considered common men, especially by the Roman noble women who visited them often after a big contest. Although surviving largely as graffiti on ancient Roman bath house walls the straight barley diet was regarded as the Viagra of that time. Evidently as time went on, the rich diet and other things greatly reduced the fertility and vigor of the male citizens of Rome. This was never true of the gladiators - and the women knew it. If you could survive the contest, it was fun to be a gladiator.

It is also most interesting to note that in most all places (Himalayan highlands, Caucasus, pre-19th century Scotland) where longevity of life is noted to be common, there are some generalities. All are in highlands and all are in regions where barley is a staple consumed in the coarsest breads (often with rye and oats). One such place of special note is the pre-19th century Highlands of Scotland where the use of strong barley bread was supported by oats, rye and some wheat. It was generally an area in the British Isles



Many thought the gladiator's way of life was glamorous. At Pompeii, someone wrote graffiti on a wall about a Thracian called Celadus, “The Man the Girls Sigh For”.

where longevity and vigor of life were noted. It was also the last area in which refined wheat flour (white) was introduced. Generally in the cities a decline in longevity was noted upon the introduction of refined wheat flour and was associated with the unhealthy conditions attributed to urban life. People in the country continued to consume the heavy mixed grain breads. The city folks did not and they got sick, looked pasty, and seemed to die sooner. There are two other things that are associated with rural Scotland. They are barley malt whiskey (scotch) and barley beer. It was often noted that when a serious disease epidemic arose in Scotland that the water drinkers died, the Scotch drinkers died, but the beer drinkers lived. Scotch whiskey and water do not have β -glucan, old-time beer did, especially the stout ales produced in Scotland.

4. Tonical Beer

Bread and beer are inextricably linked. In ancient times, somewhere in the Fertile Crescent and/or Mesopotamia when barley was the bread of life, bread was made, and in some circumstances, a loaf was left in a wet place and accidentally fermented

A Syrian soldier serving the pharaoh Akhenaten is sitting drinking beer through a siphon.



some. Upon consumption, the consumer got a little soggy buzz. It was kind of fun. Another time a loaf was wetted, allowed to set and again some soggy buzz resulted. Finally some enterprising soul threw a whole loaf in a pot and after a week or so there was a roiling, bubbly (fermenting) liquid sort of gruel - reeds straws were provided and everyone sucked up the solubles and suspended particles and got a better alcoholic buzz. Now we're really

having fun. So it got to be a regular thing. Throw a loaf or two of bread in the

pot, cover, allow to ferment (yeast and other organisms that carried out the fermentation process were ubiquitous - in the air), invite friends over, provide (reeds) straws, sit around the pot, enjoy the brew (gruel) and philosophize about life, liberty and the pursuit of happiness. Soon pots became tubs and now we had real parties.



Egyptian Beer Factory

Barley dough is made into loaves, placed over low heat, and allowed to rise, mashed under foot, strained through baskets, with the yeasty liquid poured in jars, sealed and allowed to ferment.

You can see pictures of this on ancient Egyptian temples and tombs. In somewhat of an unconscious manner it was found that whatever made barley the bread of life seemed to transfer to beer resulting in the beverage of life. So, soon, other medicinal herbs were added to the pot along with honey and dates. But barley was always the base. Other grains were

added and if no barley was available it could be and was made with wheat or rye, but over time it became clear that barley was the preferred grain for the production of the beer loaves (as they were called). Also, over time it was found that if the barley grain was moistened, germination (seed sprouting) resulted and produced enzymes that produced higher levels of fermentables and thus, a high alcoholic content beer with more solubles - it was an improvement. The term for germinated and dried grain is malt. Now the beer loaves were malted beer loaves. So now a process which includes the selecting of clean (not moldy or otherwise impaired) barley - wetting and germinating the barley to produce a germinated grain which has a 1-3 inch rootlet and a shoot that extends 1/2-2/3 the length of the kernel. The germinated grain is dried to yield malt and the malted barley is milled into flour and made into beer loaves of bread. The malted beer loaves could then be thrown into a tub of water. Other fermentables (honey, dates, fruits) could be added along with yeast starter or this could be allowed to occur naturally and after a week or ten days beer was produced

as a gruel containing alcohol (2.0 to 2.5%), solubles (protein, phenolics, β -glucan, and partially converted starch), and suspendibles (insoluble fiber).

So when we talk about the Bread of Life in the ancient world, it was consumed in two ways, as a flat bread and as beer from beer loaves. And the Roman Army that conquered the world marched with bread loaves and beer loaves and consumed barley in these two ways. It was the same for the gladiators. In each case the medicinal properties of the brew were known and the beer was considered a recreational, and at the same time, tonical beverage. It was consumed more like a thick soup or gruel. It's beneficial effects were associated with the solubles and suspendibles and the efficacy of the beverage was associated with the viscosity (thickness) of the gruel. With the spent yeast, B vitamins and β -glucan, ancient beer was a meal in itself. In time, it was found that the beer could be made directly from the malt that was ground into flour - and cooked with water to form sweet syrup that could be fermented into beer. Eventually filtration steps were added and the gruel nature of the beer disappeared and was replaced by a full-bodied beverage, often very dark. However, the filtration was relatively crude and did not eliminate the healthful elements of the beer. It was still considered first and foremost a wholesome health beverage. This was still the case when the New World was settled. The comments of the original settlers of the New World make it quite clear that the main purpose of the table beer was to keep body and soul together. In his book, *Brewed in America, A History of Beer and Ale in the United States*, Stanley Baron wrote:

The availability of beer was considered to be essential to the maintenance of good health. The governor, Sir Francis Wyatt, wrote to England sometime between 1623 and 1624 that there had been a great sickness in the colony because of "want of beere, poultry, and mutton, &c. To plant a Colony by water drinkers was an inexcusable error in those, who layd the first foundation, and have made it a received custome, which until it be laide downe againe, there is small hope of health."

It must be remembered that, in the seventeenth century, beer was the universal beverage of Englishmen and those who lived on the Continent. The water was, generally speaking, not to be trusted; by tradition it was considered unwholesome – and with good reason, of course, since contamination of common water supplies was hardly surprising in an age when hygiene was not understood. The Pilgrims settled into the upper New England area primarily because the Mayflower's store of tonical beer was running low. Baron writes:

The Pilgrims put ashore at Plymouth Rock due to a shortage of beer on the Mayflower.



The Pilgrims had to give up their idea of settling farther to the south. The ship's master and the mariners were eager to be rid of their strange load of passengers and return to their home port in England. What was more, "we could not now take time for further search or consideration, our victuals being much spent, especially our Beere." The final decision to settle in Plymouth was reached then, in some desperation, and the passengers "were hasted ashore and made to drink water that the seamen might have the more beer."

It is most clear that to the sailors beer was an important tonical medicine – to embark on a voyage without good beer was tantamount to a death sentence. Baron continues:

The crew, as it happened, depended on beer as a preventative of scurvy, a vitamin-deficiency disease especially prevalent on ships, where fresh vegetable were not available. It was certainly known in the seventeenth century that the "luyce of Lemons well put up, is good either to prevent or cure the Scurvy." But citrus fruits were not to be had in great supply, and besides they were perishable.

The religious leaders of the time also felt that good beer was essential to moral as well as physical health. Baron writes:

Disapproval of “strong water” and obvious approval of beer is typical of this period, particularly among the Puritans, to whom the notion of temperance was fitting and appealing. Moreover, beer was considered to be a means of maintaining good health on an oceans crossing. Richard Mather, the Puritan minister, made a point of this when he took the voyage in 1635: “And a speciall means of ye healthfulness of ye passengers by ye blessing of God wee all conceyved to bee much walking in ye open ayre, and ye comfortable variety of our food; we had no want of good and wholesome beere and bread.”

Without General Hospital it was clear that the people relied on beer. It should be noted that the Rev. Richard Mather was a teetotaler. The beer (table beer) that he is talking about had an alcohol content of about 2.5%, which is more of a preservative than an alcoholic inducement, and was consumed by the entire family. Babies were weaned on beer. It gave a slight buzz and was so thick and full bodied that it was impossible to become inebriated. It was considered the alternative to and the salvation against “demon rum”. It should be added that these people were not foolish. The stories outlined previously of towns where the water and demon rum (Scotch) drinkers died from disease epidemics that beer drinkers walked away from was not lost on these people. It is clear from letters such as Richard Mather’s that the efficacy of barley as a potent health tonic was accepted as a proven truth. The heavy beers of these times (up to the 20th century) were for the most part still very high in β -glucan content and probably the B vitamin complex from spent yeast. The beers drank by these English people was an unhopped ale produced by top fermenting yeast which left solubles including β -glucan suspended and dissolved throughout the beer. The beer on the continent was the same but was hopped. Hops added bitterness to the slightly sweet sticky beer and served as a preservative. The literature of the day can give one some sense of what these English ales were like. They were easy to produce but spoiled very quickly.

A popular Limerick (circa 1540):

Ich am a Cornishman, ale I can brew.
It will make one to cackle, also to spew.
It is thick and smoky and also it is thin
It is like wash as pigs had wrestled in

Now that's what I call good beer - loaded with intact β -glucan fiber, for sure (the thickness, the color, that all tells the tale).

And from William Shakespeare (a home brewer/playwright):

"Where have they this metal, can sodden water,
their barley broth, decoct their cold blood to such valiant heat"

And a quote from the Hundred Years War (France circa 1400 AD):

"They drink no water."

Indeed the British Empire that the sun never set upon - was built on tonical beer long before limes were used as the cure for scurvy. Good beer was the key to health - when the beer ran out, the sickness began, followed by death. In America every colonial town established a brewery - and home brew was also quite common. George Washington and Thomas Jefferson are two notable home brewers. I find the case of George Washington to be most interesting. This is a man who had only one clear victory in the field as a general and that was against a bunch of drunken Hessians on Christmas Day. And yet this man, often defeated but never beaten, had



The Father of Our Country in "Washington Crossing the Delaware", was a home brewer of a highly tonical Porter-type beer.

a resilience and vision unmatched anywhere in history. He took a losing record and established the greatest nation on earth - and no one questioned his authority. Where did he get such great fortitude? Well in looking at George

Washington's recipe for beer one sees the most potent β -glucan

brew ever devised. It consisted of roasted barley - no malt - with molasses added as the fermentables. This was a beer without malt. The barley provided starches and long-chained, β -glucan, all preserved totally. This would be the most potent brew since the time of the gladiators. Based on β -glucan, this was the most potent, health beer of all time. It is fitting that this man (this unshakable pillar) consumed such a brew. Stanley Baron provides Washington's point of view:

George Washington, who was a great fancier of porter, would probably have found twentieth-century beer an insipid concoction; but on the other hand, the beer drinker of today would frown on the original porter as distastefully muddy and bittersweet.

As time went on the ale's that were produced improved for taste and clarity, but the next great advance (if one can call it that) which changed beers world wide took place in Southern Germany and Czechoslovakia. Beers were brewed under cool conditions, close to freezing and bottom settling yeast were used, which gave rise to clearer (much clearer) beer. There were far fewer solubles in the beer. These clear beers became the rage and it was positively mesmerizing compared to the thick, murky but healthful ales (again, titillation replaced healthfulness). The public demand resulted in lighter and clearer beers culminating in the pilsners (the type of beer typically consumed today), with almost no β -glucan or (spent) yeast either. Filtration methods have improved and non-barley adjunct (corn, grits, rice) is routinely added to the brew kettle further diluting the barley and barley solubles. All these factors have transformed beer from a health tonic to a quickly drunken recreational beverage. All these developments are typified by the comments made by an Irish stout ale drinker to a pilsner drinking German:

"If I drank that I'd be dead in a week."

The process described herein was a gradual one. The beers of my early youth - the 50's - were much more full-bodied than those we see today (although the micro brewers are bringing some darker, heavier beers back into the marketplace). Being of

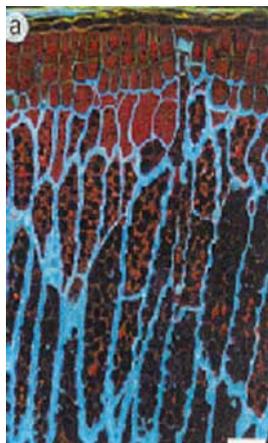
German ancestry the beer as a health tonic was still somewhat in vogue and everyone drank a little beer - no pop - pregnant women often craved a beer or two toward the end of the pregnancy. One of the reasons given for the very light bodied beers of the present day is that they were made in deference to "the weaker sex". This is far from the truth. The women of the early 20th century were quite accustomed to full-bodied beers. The only reason that beers were made light is because that is what the drinking public wanted and 12 watered down beers go down real easy compared to 3 full-bodied beers.

So now it's the 20th century - moving quickly to the 21st century. Barley bread, the bread of life, is not consumed, and the beer is devoid of all nutritional and medicinal properties. The universal health tonic of the first 5000 years of recorded human existence has been removed from western society in the span of about 100 years. I do not believe that we need to go back to heavy barley bread or heavy, low alcoholic beers to regain the universal health tonic that barley grain has provided to mankind. These people of the distant and not so distant past knew that barley grain was good for you. They knew that it was something in the barley that could be transferred as solubles (or suspendibles) into the liquid form as beer. That something was β -glucan, that something was ImmunoFiber.

5. So What is ImmunoFiber?

We now know some things that were unknown to our ancestors. The viscous β -glucan found in some amount in all barley will cleanse and activate immuno-cells of the intestines to produce Immunoglobulin A (IgA), a form of antibody designed to flush microbes, toxins, and cancerous cells from all over the body. It was the heavy barley breads and tonical beer that maintained the immune systems of antiquity.

So what is ImmunoFiber? ImmunoFiber is a highly concentrated, mobile and potent form of these same β -glucans. The β -glucan of oats is a structural component of the cell wall and is associated with insoluble fiber (oat bran) in the outer layers of the grain. It is less mobile and less active in creating viscosity than normal barley. The β -glucans of normal hulled barley are associated with the floury endosperm in the inner portion of the seed, not with the largely insoluble bran. It is far more mobile and active in creating viscosity than oats.



Calcufluor binds the cell wall β -glucan of waxy hulless barley producing the blue color. The cell walls thicken as they go deeper into the endosperm. This is not true with oats where β -glucans are tied up in the outer bran layer.

Waxy hulless barley plant types produce large quantities of free (nonstructural) β -glucan which is far more mobile and active in creating viscosity than normal barley. This is because the waxy and hulless traits reduce starch accumulation and push the plant toward β -glucan synthesis (as an alternative storage polysaccharide). Semi-arid



Yuma, AZ a good place to grow waxy hulless barley

environments which also favor β -glucan synthesis over starch enhance this effect; thus selection of growing environment is essential in producing this material. As it works out the semi-arid American west is an excellent place to produce viscous β -glucan. However, even in such semi-arid environments, there are a host of conditions most

prominently post-harvest sprouting that can result in breakdown of the β -glucan

fibers and loss of viscosity. Great care must be exercised in growing WHB to produce ImmunoFiber. However, when grown and conditioned properly, waxy hulless barley plants will produce grain with a total β -

Waxy Hulless Barley = ImmunoGrain





Covered Barley

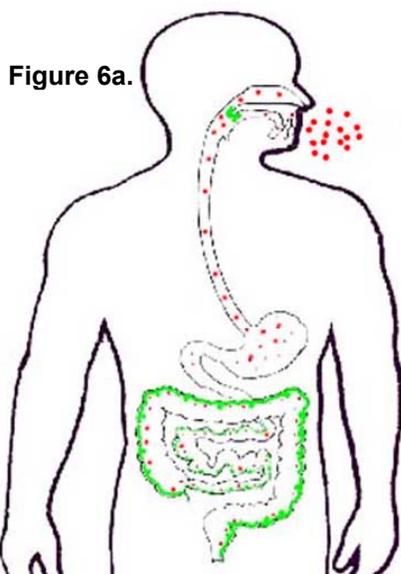
glucan content greater than 6% and a viscosity for a 5% aqueous flour suspension greater than 15 cps units. That is ImmunoGrain and the associated β -glucan is ImmunoFiber. Normal barley usually has 4% or less total β -glucan content with a viscosity of 6 cps or less, and a far less mobile form of β -glucan. This ImmunoGrain, when processed in special ways to preserve and in some cases enhance the ImmunoFiber activity, results in highly potent food products such as the hot ImmunoGrain cereal pictured here.



ImmunoGrain is processed to a whole grain flake (left) which can be eaten as a hot cereal (right) or used as an ingredient in breads, cookies and bars.



The next question is how does ImmunoFiber work? In order to answer that, we must first get some idea of how the immune system works.



- Immuno-sampling Sites
- Incoming microbes, toxins, debris, and allergens

6. The Trilinear Immune System

The very basis of the immune system resides in the GI tract, this is a fact that was not really known or understood or appreciated until just 10 or 15 years ago. The foods that you eat and the impurities that come with them condition immunity. The impurities include microbes, toxins, allergens and ordinary debris. By just breathing you bring in that same material suspended in the air that you breathe. The immune cells of the GI Tract (Fig. 6a), especially the

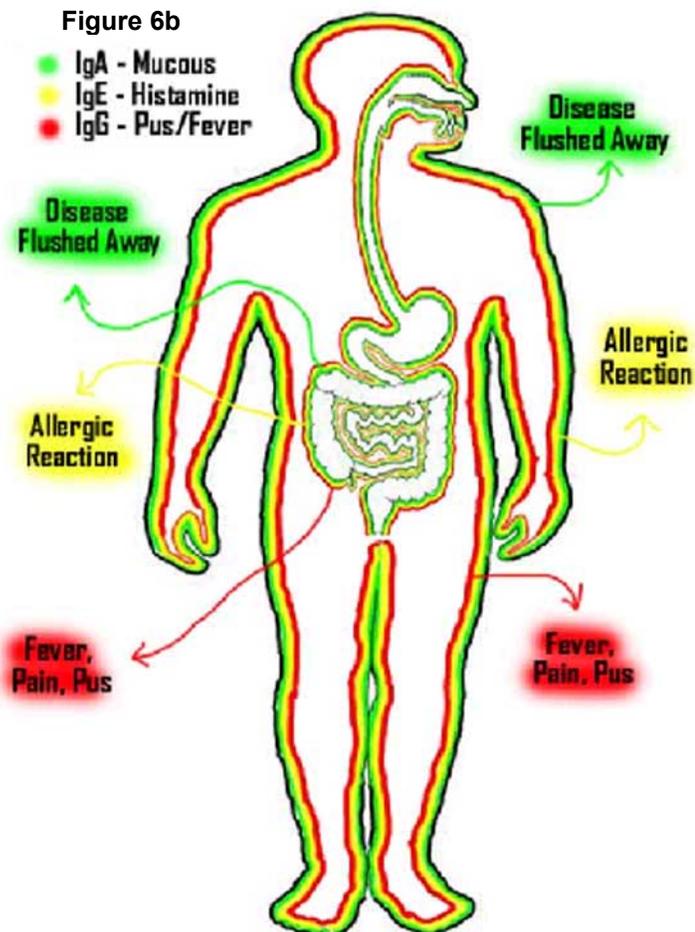
intestines, sample the microbes, toxins and debris, and produce the appropriate antibodies and immuno-cells to counter these environmental hazards. The immune system has 3 lines of defense. The first line of defense is the combination of secreted mucous and IgA. Diseases and toxins are tied up by IgA in the mucous and are flushed away. IgA is a very special antibody. It is the main secreted antibody and it neutralizes problems – flushes them away. It does not cause swelling, fever, aching often associated with infection.

Problems are flushed away with no apparent consequences (green line, Fig. 6b).

If the epidermal layer, “the IgA layer”, is broken then the second line of defense is encountered (subepidermal layer). This region is controlled by IgE and is characterized by the release of histamine (a viscous fluid, much like mucous and designed to flush the problem away), resulting in swelling and some inflammation, but no fever.

These are the allergic reactions that are seen in persons with hay fever, asthma and skin rashes. However, everyone experiences IgE reactions to some extent, often as a transitional phase in sickness (yellow line, Fig. 6b).

If this second layer is penetrated the 3rd layer of defense is encountered, the systemic or bloodstream. It is important that the blood stream not be compromised by disease and or toxins, thus the actions of the 3rd line of defense are quite draconian. This layer is controlled by IgG and results in full disease reaction –



swelling, inflammation, pain and fever. When this occurs we say a person is sick and when symptoms persist (especially fever) we make a trip to the doctor (red line, Fig. 6b).

Because the world is not antiseptic we are surrounded by pathogens and toxins inside and outside of our bodies all the time and some portion of our immune system is active at all times. It is plain to see that if IgA is dominating the picture a person is flushing problems away and is healthy (Fig. 6c).

Fig. 6c



If IgE is dominating the picture (Fig. 6d), we have a person with an allergic reaction, i.e., hay fever, asthma, or skin rashes (to name the most obvious).

Fig. 6d



If IgG is dominating the picture we have a sick, feverish achy person, someone who needs a doctor (Fig. 6e).

Fig. 6e



In the healthy people that we all know, who never see a doctor, the IgA system dominates!!

We have described the immune reaction as it relates to the mucosal surface since that is the most frequent disease entry point. But the same 3 lines of defense exist on the outside of the body. Layer 1, characterized by the tough skin (difficult to penetrate) and lubricated with IgA containing sweat presents a very impenetrable surface to most all pathogens. If Layer 2, the subepidermis is scratched with no bleeding a swelling will

occur (especially if an offending substance is introduced). This is due to IgE mediated reactions.

Finally, if blood is drawn, draconian action is taken, starting with clotting to stop the bleeding, and followed by sealing off and killing any and all invaders (after destroying large numbers of host cells along with the pathogens).

If (unfortunately) disease becomes internalized invading the interstitium (a gel-like fluid that bathes all the organs and tissues), collecting at the lymph nodes, possibly even entering the blood stream, and from there to the organs, then the same IgA, IgE, and IgG mediated reactions will occur. Just as on the body surfaces, IgA type flushing reactions are far more desirable than the tissue damaging IgE and IgG mediated reactions. Truly healthy people rely on IgA type flushing for their health with IgE and IgG only used for short periods of time in emergency situations.

The description of the immune system as a 3 layered system with IgA controlling the surface, IgE, the subcutaneous layer, and the IgG, the blood vessels, is a great simplification realizing that there are non-adaptive immuno-cells such as macrophages and neutrophils phagocytising whole organisms, killer T-cells attacking intracellular pathogens, helper T-cells activating immunoglobulin cells, and activating phagocytes, and complement elements directly attacking microbial surface receptors, and others functioning at each of these levels and interacting with each other to intensify or dampen attack depending on the particular infection situation with each cell type releasing cytokines which activate and inactivate various immune functions. It is a very complex picture. However, the general characterization of the lines of attack with a focus on IgA, IgE, and IgG gives a simplified but conceptually accurate picture of how these immune cells interact to provide a unified defense against disease. This is especially true of IgA suspended in mucous or IgA suspended in the interstitial fluid, as this is the only immunoglobulin that is secreted in large quantities, truly providing the flushing action that is the real focus of this book.

7. Adhesion – the Base Cause of all Disease

If flushing is the basis of good health, what is the basis of ill health? The question begs the answer - adhesion (sticking). Indeed, in looking for the universal cause of all illness of a non-congenital source, there is a single base cause. The offending microbe, toxin or allergen sticks somewhere. Usually a nook or cranny, away from flushing activity of the blood stream, lymphatic system (interstitial fluid) or mucous. Pioneer work by Dr. Judah Forkman has indicated that such sticking is the base cause of most all cancer. And that our bodies have a natural tendency to supply tumorous cell masses with feeding blood vessels resulting in calcification of some tumorous cell masses making them even more difficult to flush away. It has been pointed out that this process is a perversion of the natural bone making process in humans in which soft cartilage is vascularized and then calcified to form bone.

If adhesion is the base cause of all disease then universal flushing would be the universal panacea. Since ImmunoFiber activates the immunocells of the intestinal mucosa the most dominant action is mucous/IgA flushing of all mucosal surfaces, interstitial surfaces, and epidermal surfaces. Most all diseases start with adhesion to one of these surfaces.

Since all disease starts with adhesion, and tumors and cancers are calcified adhesions, it has been suggested that non-bony creatures, such as cartilaginous sharks, which are purported to be tumor free organisms (this is somewhat controversial), might have some special, innate protection to calcified adhesion residing in their cartilage. Thus, there is much interest in shark cartilage as a cancer or arthritis remedy based on the somewhat disputed observation that sharks do not get tumors or cancer. While there may be some benefit to shark cartilage (shark fin soup), in my opinion the cartilage is not the primary cause of the sharks remarkable health. It is the result of a potent, flushing immune system. Of all the animals on

earth, none has a simpler or more potent flushing immune system than the shark. The shark has only one antibody. It is Immunoglobulin M (IgM), which is the most primitive of the antibodies. It is the precursor to all of the other antibodies and like IgA it is a flushing antibody (the only other one). In humans it exists as a precursor for the other antibodies. And, along with IgA, it is the antibody of mother's milk. It is this primitive flushing of IgA and IgM that makes breast-fed newborns impervious to most disease. Sharks have massive amounts of IgM circulating in their blood stream at all times ready to attack pathogens and toxins at all times (like flushing IgA). Sharks are nearly impervious to infection, cancer, and circulatory disease due to this intense flushing ability. The other thing about sharks is that they have no calcified bone (just uncalcified cartilage). In my opinion, the reason for this is that the overall flushing action of the IgM is so overwhelming that the calcification process (turning cartilage into bone) never occurs. The flushing action is just too overwhelming. In humans this calcification process designed to make bone can go seriously awry as tumors and cancers become calcified along with material that collects about the joints and organs, often crystallized LDL's. Calcified wound tissue within the heart and blood vessels results in heart disease and hardening of the arteries. Again, flushing action of IgA should alleviate and eliminate many of these problems in humans just as IgM has eliminated them in sharks. Also, by not having the more sophisticated type immune system with all sorts of killer cells, the shark avoids the type of tissue damage that leads to cancer and autoimmune disease. In humans we have a parallel system. The flushing action of IgA makes us like sharks, impervious to all disease, simple and effective. It is only when this system is somehow compromised that the other more complicated (much more complicated) tissue damaging mechanisms are called into place. I think that it should be clear to everyone that we all want to be sharks.



Since we're on the subject, is there a scientific basis for cartilage supplements for arthritis and rheumatism? The answer is, I don't know. However, I believe that since cartilage contains the materials that are suspended in water to form mucous and the

interstitial fluid matrix, the natural flushing fluids of the body, that it may help regulate material flow into the body and promote flushing in some of the ways that ImmunoFiber does. These materials found in cartilage are the animal forms of soluble fiber which are even more overlooked in affluent western diets than plant fiber. Maybe we should be eating more grisly and cartilaginous steak, animal intestines, chicken soup and gelatin desserts. These are all good sources of animal fiber.

8. How ImmunoFiber Works

ImmunoFiber works in two ways. First, ImmunoFiber works as a GI tract conditioner.



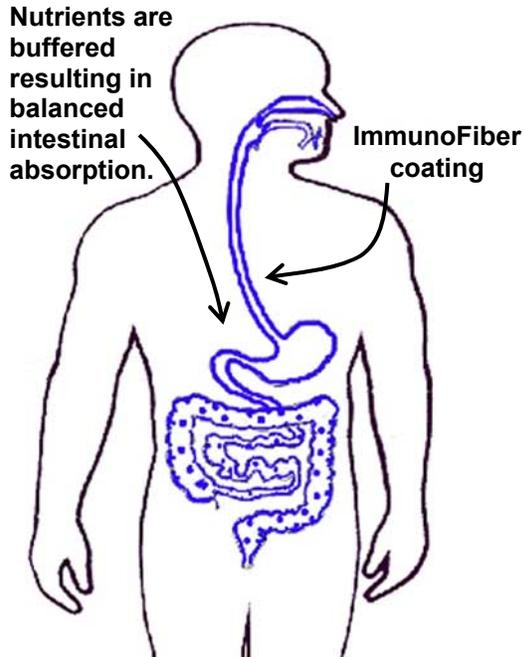
ImmunoFiber suspended in alcohol. The fibers look like a ball of cotton.

Unlike starches, sugars and proteins, β -glucan fiber is not digested by intestinal enzymes. Yet, it is unlike cellulosic fiber in that it will go into aqueous solution or suspension forming a viscous motor-oil like gel that coats the intestines and to a certain extent the entire GI tract. Cellulose, on the other



ImmunoFiber becomes hydrated in water and crosslinks to form a viscous motor oil-like gel.

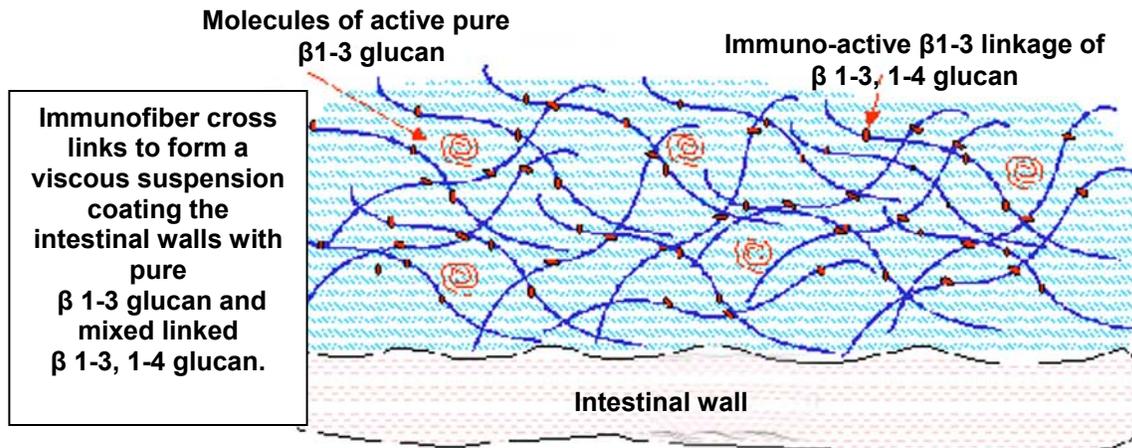
hand, is an insoluble bulk with little or no chemical activity. This ability to form a viscous aqueous gel coating of the intestinal tract is the very basis of ImmunoFiber's functionality. Substances such as fats, cholesterol, starch and sugars become trapped in this material. The starch and sugars are digested and absorbed more slowly. Cholesterol and fat is absorbed slowly and some is actually passed out of the GI tract as feces. This viscous β -glucan serves as a great buffering medium. Not allowing anything (toxins, microbes, protein, fat, cholesterol, misc. substances) to hit the intestinal walls too fast with rapid absorption and system overload. Thus the first effect of ImmunoFiber on the immune system is passive but important. High concentrations of lipids degrade the cell membranes of immune cells which in turn degrade immune function. Regulation of lipid content impacting the intestinal



This motor oil-like gel of ImmunoFiber coats the entire GI tract, buffering the absorption of nutrients into the body.

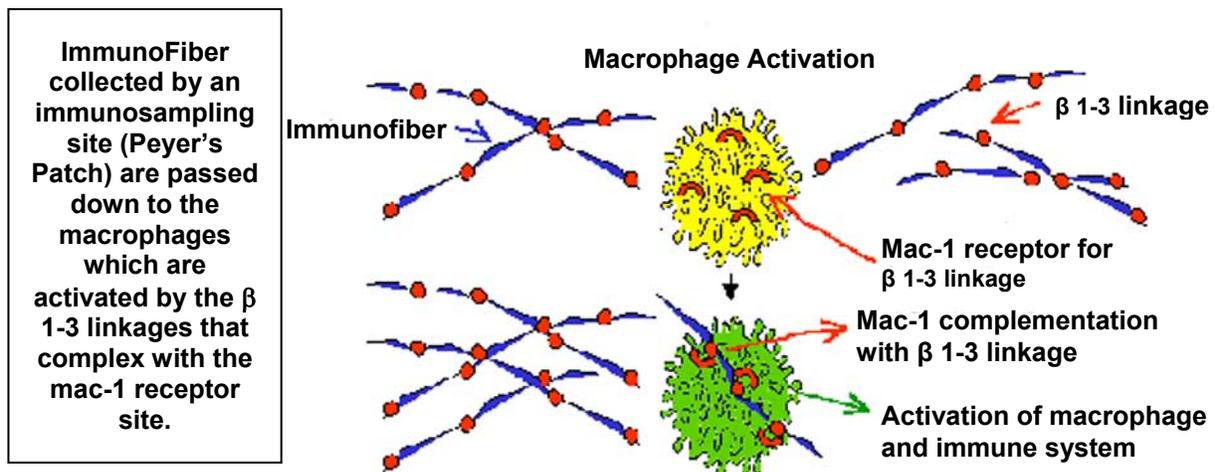
epithelium keeps important immunoreceptors intact and functioning properly. Also, proteins are antigenic substances, that can overload the immune cells resulting in allergic type misidentifications. Again, ImmunoFiber slows the process down to a level that absorptive cells and associated immune cells can handle. In addition, the intestinal epithelial cells can dry out and pull away from each other allowing unwanted substances to pass through these spaces like dust and debris through the open chinks on a brick wall. ImmunoFiber, which forms a watery gel over the intestinal cell walls,

serves as a hydrating agent keeping the cells hydrated and well chinked. A well hydrated GI tract is a healthy GI tract. ImmunoFiber hydrates the GI tract. As a GI



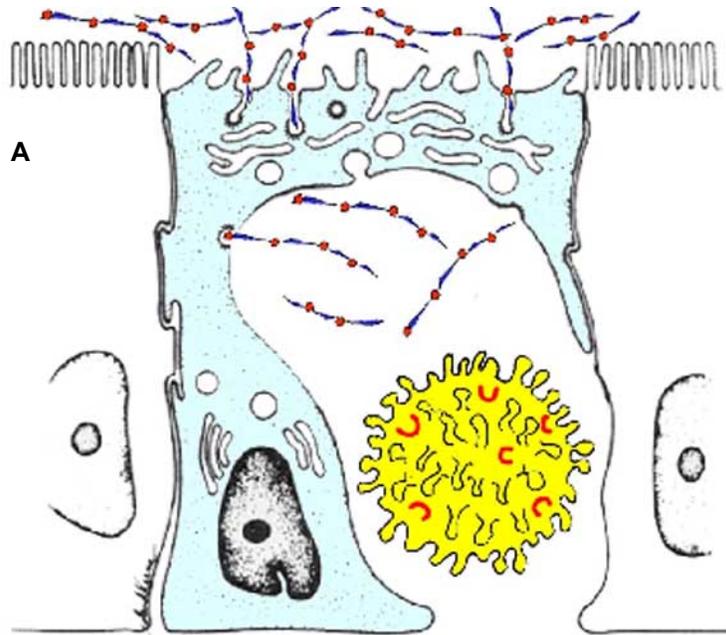
tract conditioner ImmunoFiber creates an environment that optimizes the eliminatory, regulatory and immunogenic activities of that organ.

ImmunoFiber's second function is as an actual immune system activator. This is due to a special quirk of nature. Most all cereals and plant-derived foods, in general,

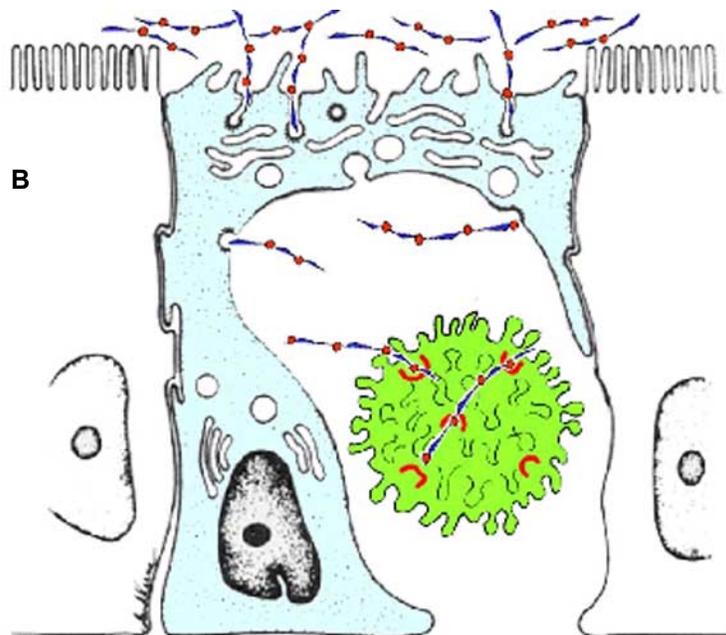


produce cells that have cell walls composed of cellulose which is indigestible, insoluble β 1-4 linked glucopolysaccharide. This β - type linkage is not digestible in the human body. The human immune system recognizes cellulose as a harmless component of food. The cell walls of bacteria, on the other hand, are composed of β 1-3 linked gluco-polysaccharides. This material instantly activates the human immune system which recognizes the β 1-3 glucan as the marker of a foreign invader. The β -glucan of ImmunoFiber is a water suspendible, polysaccharide composed of a mixture of β 1-3 and 1-4 linkages and suspended coils of pure β 1-3 glucan. Just as in the case of bacterial β -glucan, the human immune system is instantly activated by the ImmunoFiber β 1-3 linkages. In short, the immune system is fooled into thinking that ImmunoFiber is bacterial (and dangerous) in nature and, in turn, the immune system is activated.

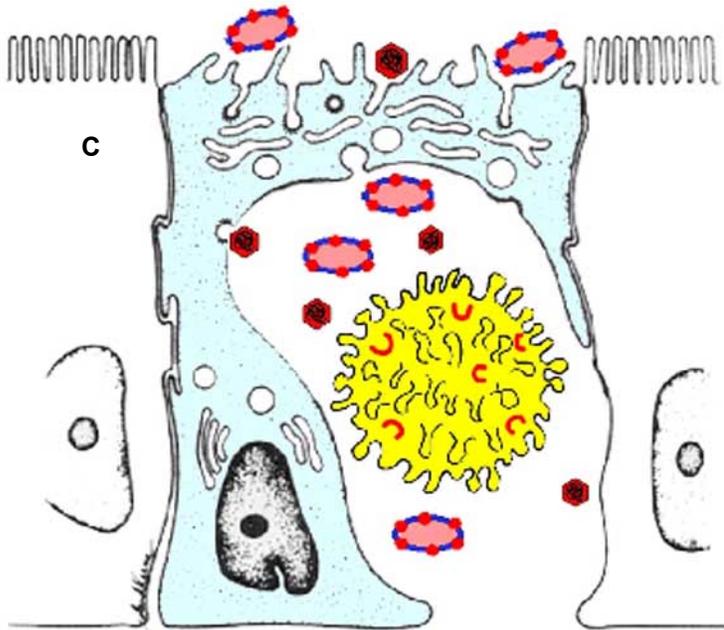
Now the immune system is activated but not actually put in gear. ImmunoFiber attaches to immune cell receptors and turns the identification and activation machinery on. But, if ImmunoFiber is alone, it is quickly identified as friendly and no action is taken. However, if there is a toxin or microbe present then an immune response is mounted to the bad guy. Thus, ImmunoFiber functions as a catalyst sensitizing immune cells to pathogens and toxins resulting in identification and possible elimination. When used in vaccines, such substances are called adjuvants. When used in foods, the ImmunoFiber serves this role, fostering a sort of dynamic oral inoculation against any of the microbial population the body might encounter at any time or place. The figures below illustrate this adjuvant action of ImmunoFiber.



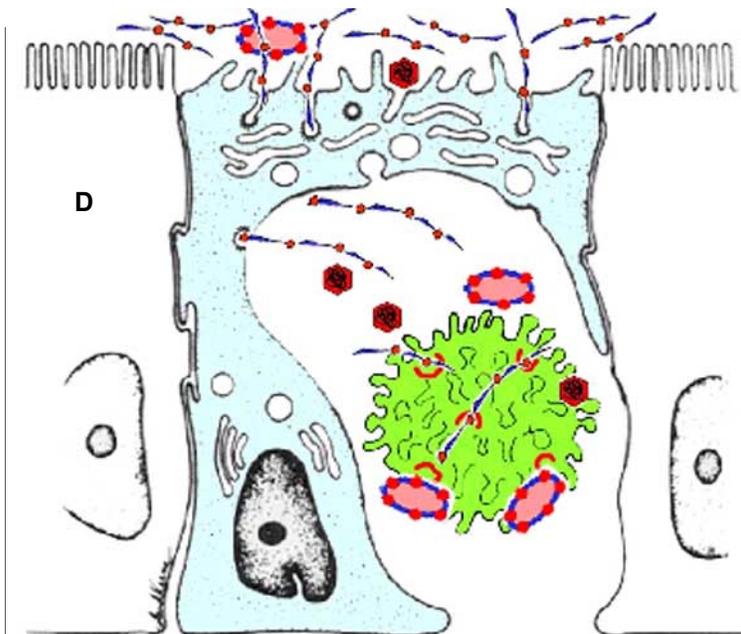
A) An intestinal immuno-collection site called an M-cell (possibly part of a Peyer's Patch) is collecting ImmunoFibers and passing them down to an inactive macrophage.



B) The ImmunoFiber begins to complex with the macrophage and the macrophage is activated making it sticky so that microbes and toxins will tend to stick.

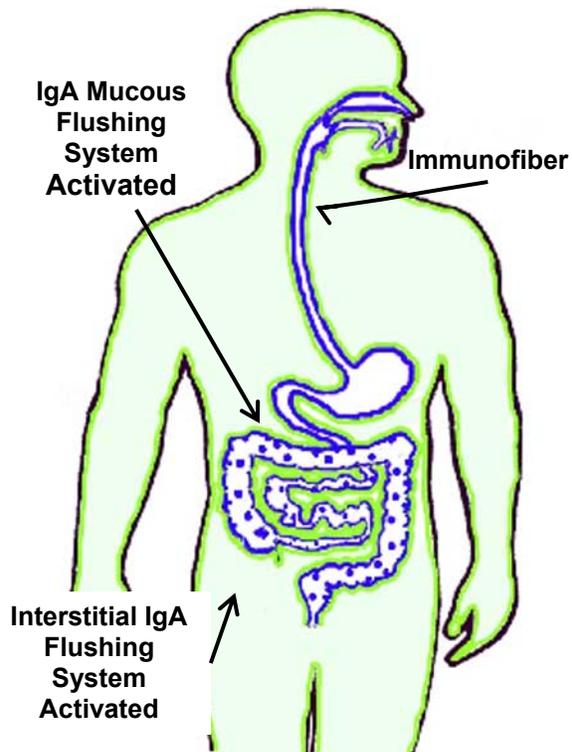


C) This M cell has collected virus and bacteria but since the macrophage is not activated, the microbes are not sticking to it, so no immune response is initiated. In time, the macrophage will hold a bacteria and be activated. But by this time it could be overwhelmed by the microbes.



D) This macrophage has been activated with ImmunoFiber and the collected virus and bacteria are absorbed (stick to) by the macrophage resulting in an immune response to the microbes. The macrophage serves as the on-off switch for the intestinal immune system. This macrophage is on. In some cases the sticky ImmunoFiber may latch on to a microbe or toxin and bring it to the macrophage. In this case, macrophage activation

and immune system activation can occur simultaneously. This technique of combining adjuvant and antigen is often used in the development of vaccines.



ImmunoFiber activates the IgA mucous flushing system.

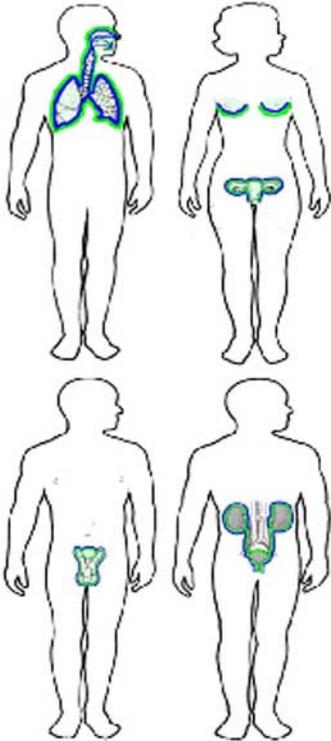
The stomach and intestines are perfect places to carry out this function of immune sampling for two reasons. First, this sort of oral inoculation results primarily in activation of the flushing IgA system. This activation of the intestinal immune system results in production of appropriate complementary IgA to all the microbes and toxins entering the GI Tract. A powerful response at the surface of the GI Tract results in strong response of IgA and mucous flushing at the surface of the mucosal barrier – and there is no serious penetration of the first line of defense. Second, as toxins and microbes are moved away from the

intestinal walls by flushing antibodies or immune cells, they are destroyed by the digestive enzymes of the GI tract and are passed out of the body with the feces.

A remarkable aspect of this whole process is that a challenge at one mucosal site results in immunity (secretion of complementary IgA and mucous) at all mucosal surfaces. As stated earlier, this is a form of oral inoculation. The oral polio vaccination is accomplished using this same technique. This is the normal mode of natural inoculation that occurs in those idealized people that never get sick. They are self-inoculated and just flush disease away. This is the way that it should be in all of us.

If this effect is not remarkable enough, this same IgA that is produced for secretion on mucosal surfaces is also secreted into the interstitial fluid that bathes all the organs and tissues of the body and thus flushes microbes and toxins from the surfaces of all the organs and tissues of the body. Finally, there is a special version of IgA that is secreted into and flushes microbes and toxins out the blood stream.

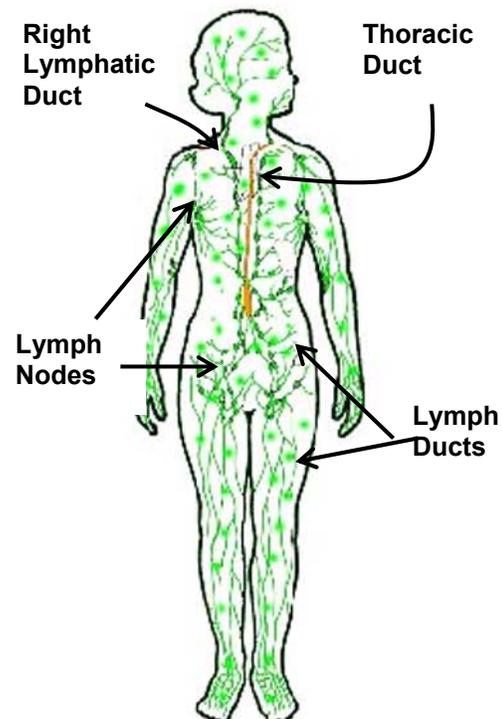
While IgA flushing is the dominant activity produced through oral inoculation, one of the findings that has come from the most recent studies of immunization techniques, is that a complete and balanced immune response for all three types of immunoglobulins, IgA, IgE, and IgG, can be conditioned from a challenge in the intestinal tract (nose, mouth, esophagus, stomach and intestines). It is becoming very clear that this is the most desirable challenge surface. All other methods (subcutaneous, intravenous, interperitoneal) represent invasions of the body. Only the orderly identification and response conditioned at the mucosal surfaces of the GI tract from orally consumed antigens result in a



ImmunoFiber activates the IgA flushing system at all mucosal surfaces, not just the intestines.

truly natural response. Finding the right carrier to achieve this process is the real challenge. And that is where ImmunoFiber comes in. It activates the intestinal immune system and latches onto pathogens and toxins, moving them to the immunocells of the intestine where they are identified and an appropriate immune response is produced.

Thus, there are two facets to the action of ImmunoFiber. First, by the



ImmunoFiber activates the flushing IgA activity of the entire body, inside and out, top to bottom!

physical action (viscosity) of ImmunoFiber the flow of food materials, microbes, and toxins is controlled so that the intestinal digestive/immune system is not overwhelmed by sheer numbers. Second, the individual fibers, by virtue of the β 1-3 linkage, complex with macrophage cells just below the intestinal mucosal surface, resulting in activation of the immune system which sorts the good guys from the bad guys and takes appropriate action. In doing this, ImmunoFiber serves the role of a universal adjuvant insuring the proper immune response to every sort of microbe, toxin, allergen, food element, and cellular debris that might cause degradation to the body if left unneutralized. Those of us that consume foods rich in ImmunoFiber are inoculated against these environmental hazards in much the same manner that we were inoculated against the polio virus by eating a sugar cube laced with nonpathogenic polio virus. I believe that it is this property that makes barley breads, and beer the universal tonic of antiquity. It gave people of ancient times a safe, natural method of oral self-inoculation against diseases when no other method of doing so existed. ImmunoFiber is Nature's universal adjuvant. So that by simply eating a bowl of ImmunoFiber cereal regularly, the flushing activity and oral inoculation against every disease and toxin is achieved.



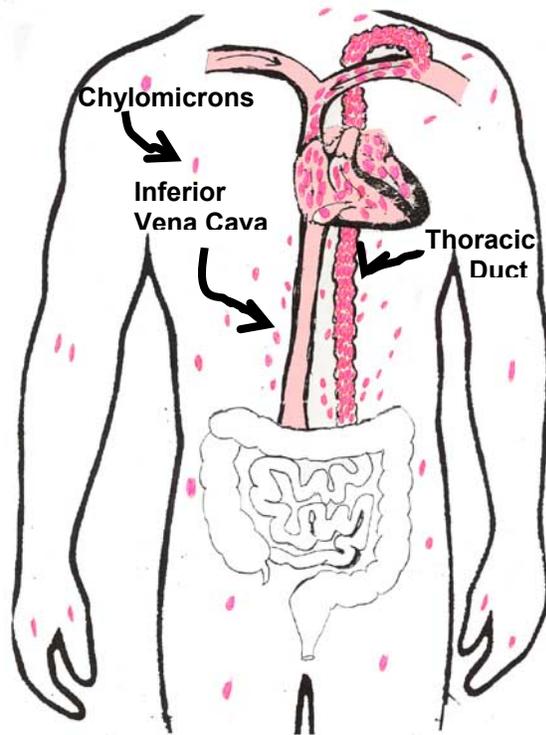
Oral inoculation and immunological flushing is achieved with a 1.5 to 3 oz serving of Immunofiber cereal.

If ImmunoFiber and IgA/mucous flushing are the heroes of this story, who is the villain? That would be Mr. Refined Fat. The agent of adhesion and clogging which in turn, is the root cause of all noncongenital disease.

9. The Pathogenicity of Human Fat Metabolism

The Problem

Fat digestion and transport within the human body is so provocative as a cause of illness and disease that one must seriously wonder if the body was ever meant to digest refined oil. Carbohydrates are broken down into sugar, absorbed by the intestinal cells and transported via the blood stream for processing and distribution. The same is true



Chylomicron transport after a high fat meal as described by Dr. Mann. All other digested materials transported as molecules via the vena cava.

for proteins that are broken into amino acids or polypeptides and transported into the blood stream. The blood stream (veins and arteries) is like a solid conduit or pipe. Fats on the other hand, are quickly absorbed by intestinal cells formed into fat organelles called chylomicrons which are excreted into intercellular spaces by lymphatic vessels and transported to the thoracic duct (the main lymphatic vessel) and from there they journey to the innominate vein and are dumped as intact fat globules right into the heart chambers with feeder vein activity directed into the arteries feeding the heart.

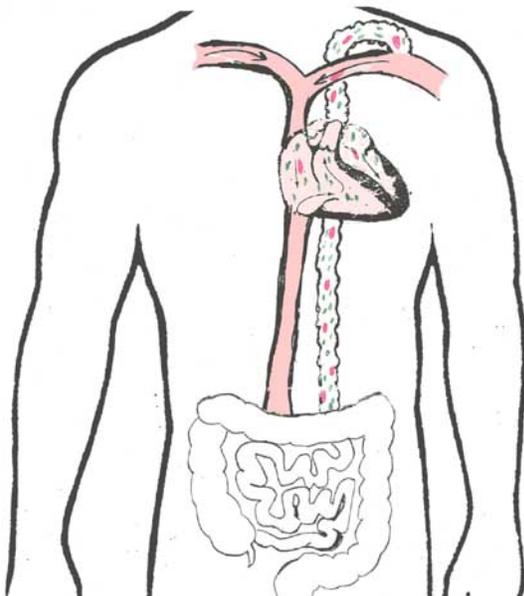
If this does not cause alarm in your mind it certainly does in mine. Furthermore the lymphatic veins (there are no arteries, just

collection veins moving everything suspended in the interstitial fluid back to the blood stream) are unlike the tight walled blood vessels. They leak like sieves. Nowhere is this described better than by the German Doctor/Novelist Thomas Mann:

“The lymph is the most refined, the most rarefied, the most intimate of the body juices . . . it is the lymph that is juice of juices, the very essence . . . blood, milk, crème de la crème: as a matter of fact, after a fatty diet it does look like milk . . . the blood . . . did not come into immediate contact with the body cells. What happened was that the pressure at which it was pumped caused a milky extract of it to sweat

through the walls of the blood vessels, and so into the tissues, so that it filled every tiny interstice and cranny, and caused the elastic cell tissues to distend. This distention of the tissues, or turgor, pressed the lymph after it had nicely swilled out the cells and exchanged matter with them, into the vasa lymphatica, the lymphatic vessels, and so back into the blood again, at a rate of a litre and a half a day.”

So if you can picture this, after an oily meal the globs of fat not only move up to the heart where they clog up the works, but they leak out of the thoracic duct where they clog up “every nook and cranny” of your body. This whole picture makes high fat foods sound dangerous. But it gets even worse. The IgA and antibody producing cells that are

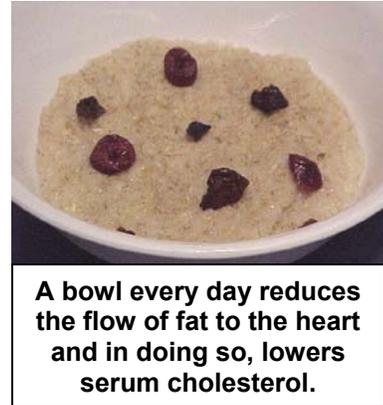


Chylomicron transport in a low fat or controlled fat meal; note that IgA is now being transported to the bloodstream – not crowded out by chylomicrons and chylomicrons are not leaking into body cavity.

produced in the intestines and at lymph nodes throughout the body are transported to the blood stream and heart to fight systemic infections by this same lymphatic system via the same thoracic duct. The same thoracic duct to be loaded into the blood stream. They too are clogged in fat. But even worse, the membranes of these immuno-cells, like all cells, have a lipid (fat/cholesterol) based membrane. These fat globules will disrupt these membranes and impair or destroy immune function. So you have a load of fat going to the heart with impaired or no immuno-cleansing. But it continues to get worse. The fat globules that leak out of the thoracic duct on the way to the heart move

into (every nook and cranny) where they must be eventually cleaned out. But in the meantime, they represent sticky adhesion spots where disease can develop. Disease and rogue cancer cells like sticky nooks and crannies to hide from flushing IgA.

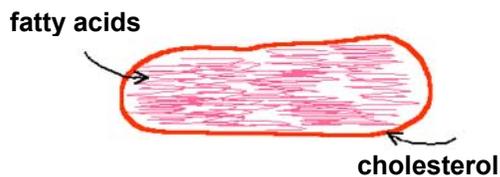
Immunofiber solves this problem by regulating the flow of fat to the lymphatic duct and stimulating IgA production. Thus, the two components, cholesterol and IgA, are transported to the heart as a clean, smooth moving package and the excessive leakage of cholesterol into the interstitium is prevented. This is what can be achieved by consuming Immunofiber as a hot cereal every day.



A bowl every day reduces the flow of fat to the heart and in doing so, lowers serum cholesterol.

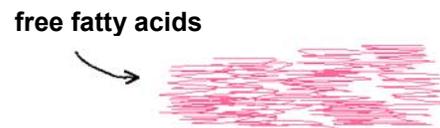
Cholesterol / Fat Transport

In order to understand why LDL cholesterol overload is such a time-bomb it is

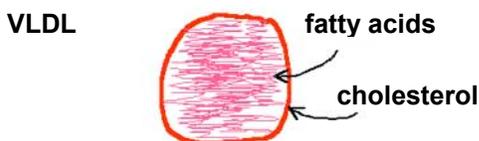


cholesterol membrane filled with fatty acids. They are transported via the thoracic duct to the heart and bloodstream. There they go from cell to cell delivering free fatty acids.

necessary to take a look at the cholesterol/fat transport system in humans. As stated earlier fat is digested and converted into chylomicrons which are vesicles with a



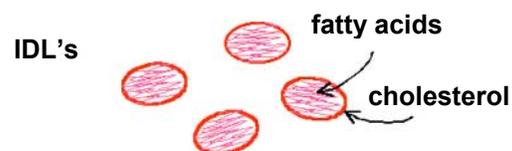
In time, as the fatty acids are delivered to cells, the chylomicron is reduced to a

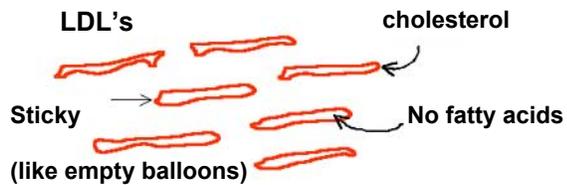


Density Lipoprotein (IDL).

Finally after all the fatty acids have been delivered deflated, balloon-like Low Density Lipoprotein (LDL) are left. These are very sticky and adhere to everything. Cells will absorb these for new membrane

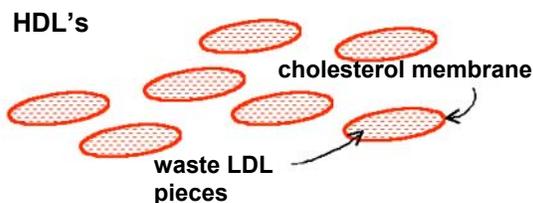
smaller vesicle, Very Low Density Lipoprotein (VLDL). The VLDL's continue to deliver fatty acids to cells all over the body and in time, smaller particles result. The vesicle balloon begins to deflate turning into Intermediate





The High Density Lipoprotein (HDL) are cholesterol lined vesicles sent from the liver that start out empty and go from nonviolent macrophage to nonviolent

macrophage and other cells within the body and collect pieces of cholesterol left over



flushing immune system, the sticky LDL's are cleaned up quickly. However, in an overload situation with impaired immune function, they stick everywhere creating potential disease adhesion points.

Nowhere is this process more pronounced and dangerous than the heart.

material. If excess exist, they are tied up by IgA or eaten up by nonviolent IgA stimulated macrophages and taken to the liver for recycling.



from LDL metabolism. When full they deliver the stored LDL back to the liver for recycling. The important point in all of this is that with regulated absorption of fat into the blood stream and a fully functional

Full load of LDL



The cholesterol used to form these chylomicrons is closely related to bile salts used in the digestion of fat and is released into the intestines along with bile salts from the liver via the gall bladder for that purpose. After the fat digestion is completed, the bile salts are reabsorbed into the blood stream and sent to the liver. The cholesterol is used for chylomicron formation and sent via the thoracic duct to the heart. When ImmunoFiber is consumed you can actually see the bile salts/cholesterol trapped in ImmunoFiber and passed out with the stool as a brown yellow color quickly bleeding into the toilet (from the stool). This is a sign (a good sign!) that you are not absorbing excessive quantities of cholesterol and fat. Thus, a floating (fat is lighter than water),

brown/yellow stool is a good sign that cholesterol/fat is not overloading the lymphatic system and your heart. A dark stool that sinks like a rock is obviously not a good sign.

Fat and the Heart

Clearly the overloaded fat transport of the thoracic duct clogged with chylomicrons and causing impaired immune function does not bode well for the heart muscle. Thus, I'd like to include some observations made by a cardiologist in the 1960's, Dr. William A. Brams, M.D., on the nature of the damage of heart disease. I think that it is quite apt and we are hearing this from someone who was practicing medicine at a time when the role of cholesterol was not well understood. One of the misnomers of heart disease is that it is a slow steady process like the disposition of lime in a hot water pipe.

“... the type of hardening of the arteries that provokes coronary thrombosis (heart attack) involves the inner coat of your heart's arteries. It has the same effect on the lining as a coating of rust or alkali deposits has on the inside of a water pipe: it roughens the surface and narrows the passage.”

I think that this is a poor and misleading analogy, but very understandable. Dr. Brams quickly corrects it with a passage about what he actually sees as a cardiologist when he is looking at a coronary artery (not a water pipe):

“In a hardened coronary artery, the marvelously smooth inner coat is overgrown with a mat of rough material. Here and there are small patches of fat and deposits of a substance known as cholesterol ... This pebbly surface may be further corrugated by abscesses which break and then heal over leaving rough scars. The tiny vessels which bring blood to nourish the triple-plated arterial wall often rupture, bleeding into the wall and adding their bit to the thickening and coarsening. All this wrinkling and roughening reduces the bore of the artery and in the end the broad satiny tunnel through which blood once coursed so swiftly and easily shrinks and begins to fill in, presenting endless obstacles to flow and numberless invitations to clotting.”

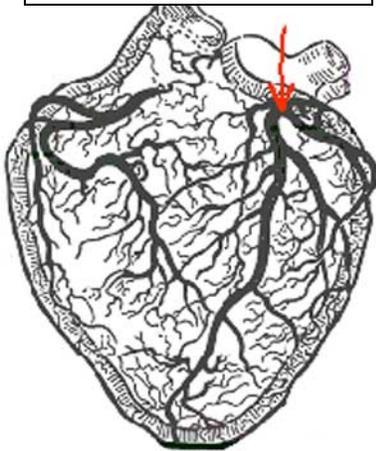
Note what he describes here, wounding and infection - these are the demons of the immune system - fat and cholesterol collecting - possibly in the bodies of spent immune

cells, killer cells and toxins stuck in the goop of cholesterol and puss. It is not slow accretion, it is wounding (infection and repair). Dr. Brams goes on:

“At the age of twenty, almost anyone is likely to have a few fatty deposits on the arterial wall, especially at the point where the left coronary artery takes a sharp turn on its way downward toward the point of the heart. This particular spot suffers special strain. You know that in a garden hose the water pushes hardest against the curves and the turns and if the pressure grows too great those are the places at which the hose will burst. In a like manner, the sharp curve in the left coronary artery has the heaviest wear and tear and is the most common location for a clot.”

This is not slow accretion. This is wound and repair. This is not a spot where lime would

This turn is the most common site of blockage!



deposit in a pipe. It is just the opposite. He is describing a place where wounding and resulting scar tissue occur and where excessive fat and cholesterol can collect. Forty years

later Dr. Dean Ornish makes the same characterization:

“Blockages form when the lining of a coronary artery is damaged. The body attempts to repair this insult by putting the physiological equivalent of a Band-Aid over the damaged area. This band-aid is made of cholesterol, collagen, and other materials.”

The immune scavenger cells continually remove this material in a young healthy person consuming a somewhat fatty diet. Dr. Brams continues:

“After the age of forty it is common to find some hardening in both the left and right arteries of the heart. ... By the time you are fifty, the deposits may be frequent and thick enough to reduce the artery’s bore seriously and interfere with circulation.”

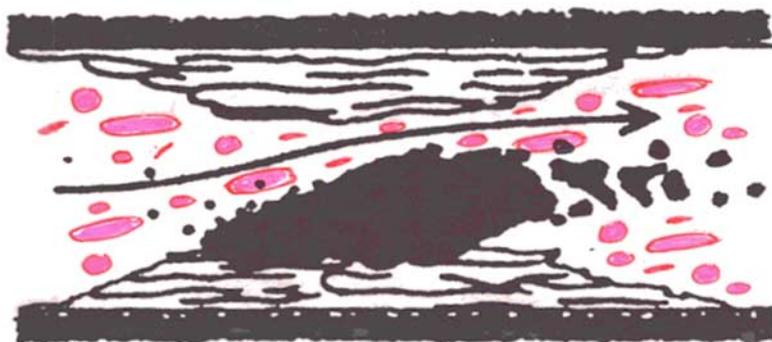
This is inevitable in societies where high levels of refined fats are consumed. Somewhat confused (at this point in time) the doctor speaks of cholesterol and fat:

“In certain diseases of man, excessive amount of lipids (fat) accumulate in the blood. This occurs in diabetes, inadequate thyroid function, certain forms of kidney trouble, and in a condition known as hypercholesterolemia.

Atherosclerosis occurs in these conditions at an earlier age and in a more severe form than in normal individuals.”

By impairing the immune system, the excessive fat/cholesterol results in the above

Complete obstruction of the coronary artery can result as chylomicrons , VLDL , IDL , and LDL pass through a wounded area.



Plaque rupture, platelet activation



Complete obstruction

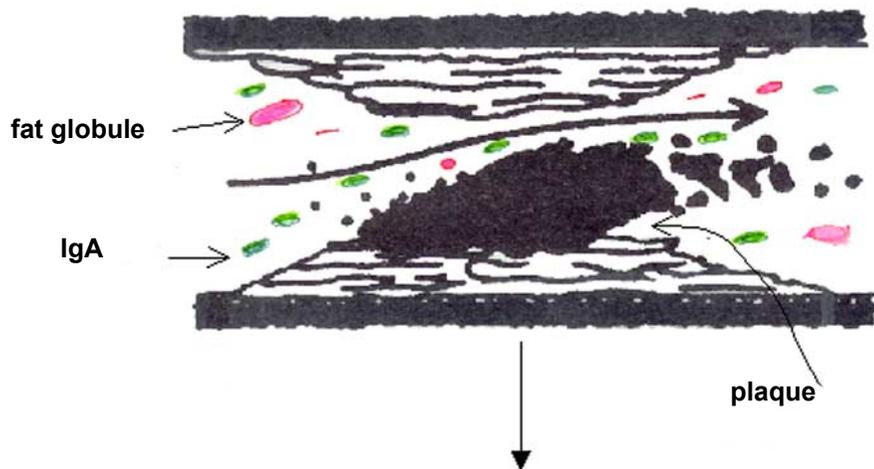


A single Thanksgiving Day dinner can cause a heart attack if this type of narrowing exists in the coronary arteries.

disease and more. When impaired - the excessive fat/cholesterol will stick to scar tissue that results from the inevitable infection in the heart and everywhere else. It's a vicious cycle. Once the lipids (fats) enter the arterial walls, they deposit themselves under the silky smooth inner lining and set up irritation (that's more infection). These sound a lot like our disease adhesions.

Dr. Brams reported confusion about the role of lipids

and cholesterol. “The distribution of the arteriosclerotic area is ... patchy, an area here



The IgA directly and through activation of nonviolent phagocytes begins to remove plaque.



Meals with less fat and the presence of flushing IgA can result in clearing of the plaque. Rather than a trip to the hospital, you're out playing football with your children and grandchildren.

or there." It's a wound and scarring process, not slow adhesion.

"Adolescents and young adults eat the same foods as other people, yet the younger generation develop arteriosclerosis far less frequent." He did not take into account the immune system. With the aging process the immune system declines (after 40, it declines rapidly) as does immunological flushing action. Thus, heart disease becomes a problem after 40.

Finally, I would like to refer to Dr. Brams' profile of the typical person who will get a heart attack:

- a man who is past the age of 45;
- a busy office worker or executive, always hurried, always overworked and plagued by a hundred business problems;
- an ambitious individual - you drive yourself hard and allow business and social obligations to interfere with rest and sleep;
- a restless and unhappy man at home, your wife seems to be always complaining and your children are quarrelsome and impertinent;
- a victim of constant worry;

-a hearty eater, overweight by 10-15 lbs or more; and fond of stimulants.”

He has described two things here, a high fat diet and stress (possibly poor stress management). We all have stress, but at any rate this clearly fits the fat/immunological model of heart disease. As stated earlier, as one gets past the age of 40 the immune system declines. We don't understand, but we know that after stressful periods the body's immune system will abruptly shut down for a time. It is called adrenal exhaustion - at this point we are most vulnerable to any sort of infection. The high fat diet further diminishes the immune system with the goop over effect - and the fat just keeps pouring in to the coronary arteries almost directly from the lymphatic vessel. In such a situation fat/cholesterol accumulation is inevitable and at some point in the process arterial narrowing becomes inevitable, too. It's intuitively obvious. While the main adhesion is LDL, the overall load presented by the excessive chylomicrons clearly exacerbates the problem. It should be noted that the advantage of polyunsaturated fat compared to saturated fat is that they are cleared from the system 10 times faster. Again, turnover/flushing is the key. In short, Dr. Bram's profile can be described entirely by the immunoflushing mechanism. The combination of aging, stress, and fat can become lethal after the age of 45.

More Thoughts on Infection and Wounding as the Prime Cause of Heart Disease

More and more it is becoming apparent that infection is a prime cause of heart disease. A number of years ago a similar observation was made with regard to stomach ulcers. It was found that most were caused by infection and repeated wounding. Now we are seeing this with heart disease also. This trend will continue for other diseases. Immunofiber is a good way to flush these problems away naturally before they become a serious medical problem.

The following are a few examples of stories from the popular press:

February 26, 1999 THE FORUM Article by Dave Olson
 Doctor: Condition that claimed Moorhead teacher's life is rare.

The medical condition that claimed the life of a Moorhead second-grade teacher Wednesday is a rare outcome for a common viral infection, according to a heart specialist at MeritCare Hospital in Fargo. Marlene Olson died of heart failure following complications from a viral infection.

Dr. Vish Bhoopalam said Thursday he was not privy to the particulars of Olson's case, but he said it is similar to a type of case he is familiar with.

He said myocarditis, or inflammation of the heart, is caused when a person gets infected with a virus. The most common source, he said, is coxsackie B virus, though he said the influenza virus, which causes similar symptoms, can also spark it. 'Within a week or two after the initial infection is when they develop the weakness of the heart muscle,' Bhoopalam said. "A lot of people get these virus infections but a very small percent among them are susceptible to the (heart inflammation). The theory is that these people have some kind of genetic predisposition where the virus triggers an auto-immune reaction, which means the body's own mechanism ... starts destroying the heart muscle," Bhoopalam said. He said that of those who develop myocarditis, about a third will recover with support treatment. He said another third will improve slightly and another third will experience chronic symptoms of heart failure. Bhoopalam said those in the latter group may be candidates for a heart transplant.

I've heard recent statistics (Dr. Bob Arnot of the Today Show, NBC 1999) that 50% of all heart attacks are in some way due to infections in or on the heart. I would say that if the root cause was determined in every single case, it would be much closer to 100%. A recent article suggested a similar possibility.

Article in PARADE March 7, 1999

"Can Antibiotics Help prevent Heart Attacks?"

Researchers at Boston University School of Medicine have reported the discovery of a link between antibiotic use and a reduced risk of heart attack, says a report issued in the *Journal of the American Medical Association*. The researchers compared the medical records of 3315 people who had suffered

heart attacks and 13,139 who had not. Those who had taken certain antibiotics had a lower risk of heart attack, in some cases by as much as 55%.

About 5 years ago my 72 year old Aunt Virginia had her teeth cleaned but did not take the prescribed antibiotics before the procedure - the bacteria from her mouth got into the blood stream (got by the mucosal IgA barrier). There it collected about a heart valve, IgG attacked, destroyed the heart valve and she died.

Believe it or not, this is fairly common in older patients. Again, in each case, we are talking about infection and adhesion as the root cause of heart disease. A younger Aunt Virginia with a younger immune system would not have died from such a simple procedure. Again, 1.5 to 3 oz of ImmunoGrain eaten daily promotes the kind of immunological flushing that can clear infections of the heart which is the real cause of heart disease.



A bowl everyday can clear infection that clogs heart vessels.

Clogged Lymphatic Drainage, A Concern for Young and Old

A healthy dose of ImmunoFiber, a low but adequate intake of unsaturated fats, and some reasonable exercise is a prescription for health in those of us that are growing old. But, what about the young and the feckless? Do they need ImmunoFiber? It's becoming increasingly apparent that they do. In our discussions we have focused on the thoracic duct of the lymphatic system as that has the most impact on the heart. But, in fact, the entire body is service by this drainage system.

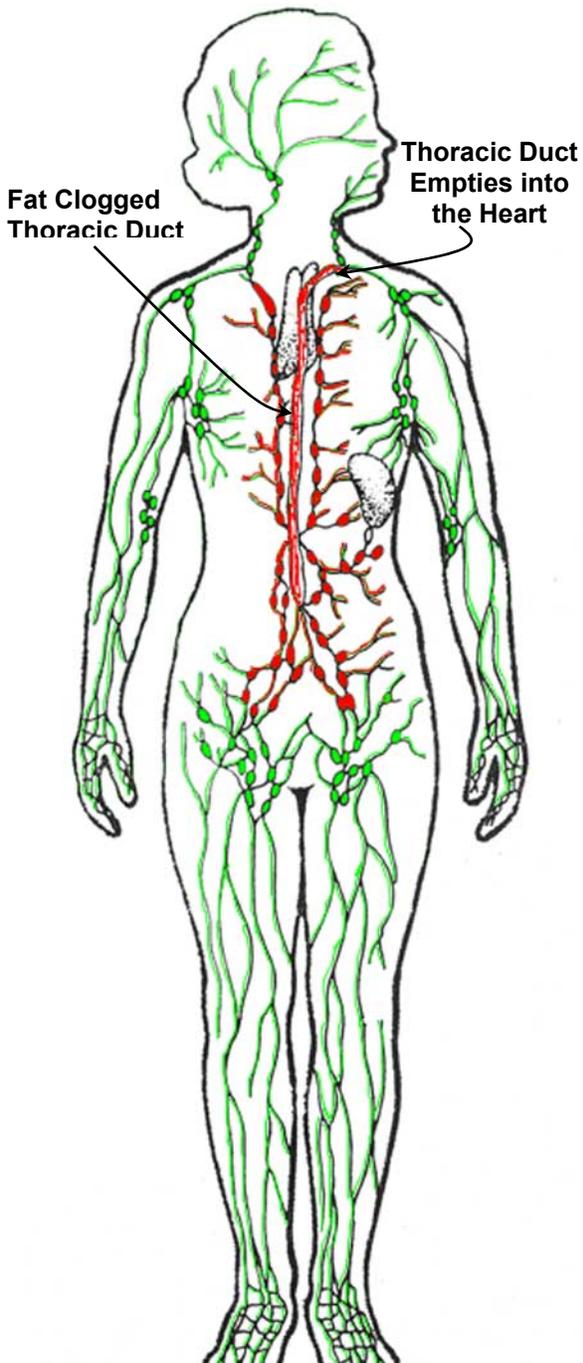
The lymphatic veins are designed as a drainage system to remove unwanted materials (often with the aid of complementary immuno-cells and antibodies) from the interstitium, the place of the nooks and crannies where disease, toxins, rogue cancer cells, and other unwanted substances accumulate. It is also the transport system for the immunocells that condition all immunological response. If we go to our original picture of fat (chylomicron) transport (p.32) and add the rest of the lymphatics, we get a better picture of its extent (p. 43). Since much of the system drains into the thoracic duct (the

main vessel), not only does excessive fat transport put pressure on the heart but it backs up the rest of the lymphatic vessels. The main symptom of a poorly draining lymphatic system is swelling (called edema) which is another affliction of aging and the aged. However, each of us experience some of these effects after a high fat meal regardless of age. There is a sluggish feeling. It is clear from studies on well-tuned athletes that this fat overload is detrimental. Dr. Dean Ornish in Reversing Heart Disease (1996) provided the following story:

According to the New York Times, Janet Horowitz, the Jets nutritionist has declared that fat is out and healthy eating is in. Jerry Attaway, the 49er's trainer, likes to tell about a classic experiment:

“You bring one of our football players in and put them on a stationary exercise bike and tell them to work as hard as they can for as long as they can, and you time them. Say the guy lasts for 8 minutes and then he's just exhausted. Then for three days you put him on a high fat diet. He comes back in, goes on the bike and he'll last probably only 6 minutes. He's lost that much strength. Then you put him on a high carbohydrate, low fat diet for only three days and he'll probably go up to 12 minutes. It makes that much difference.”

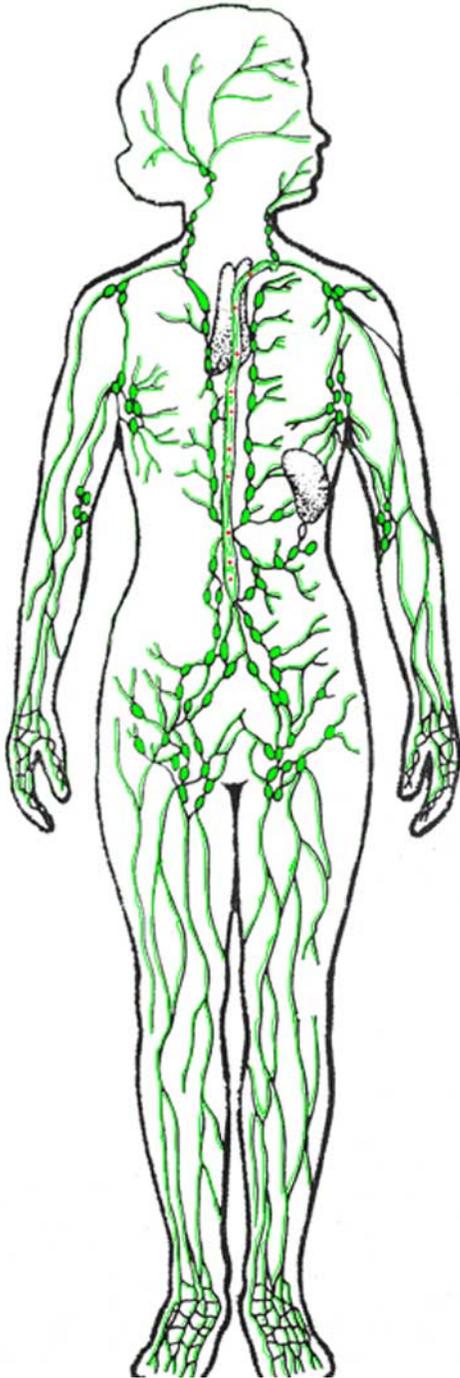
As aging occurs the feeling goes beyond sluggish to a bloated feeling. This occurs because of interstitium swelling due to high levels of dissolved and suspended solutes which hold water. Remember the lymphatic system functions as a drainage system, IgA delivery system, antigenic processing system, and somewhat incongruously, the fat transportation system of the body. It seems like a real flaw in design because after a high (refined) fat meal the main lymphatic trunk is totally clogged with fat globules (chylomicrons). This causes a backflow into the interstitium. Also, remember as the leaky lymphatics are moving fat to the heart and bloodstream they are leaking into the interstitium putting more of a load on drainage. This is a real problem for the lymphatics because they have no pump.



This person has a clogged lymphatic system with excess fat (chylomicrons) backing up into the body cavity. This degrades immunological flushing and general physical conditioning. This person feels sluggish and bloated.

While the blood-carrying arteries and veins are under positive pressure from the heart, the lymphatics are under no direct pumping pressure. The overall pressure created in the body through the pumping action of the heart, and bodily movement (exercise), and hydrostatic forces created by solute loaded interstitium on empty lymph vessels are the only mechanisms that move lymph along. But, when gorged with fat as stated earlier, this force is negated and the system backed up. In older people you can see and feel the swelling. In younger people swelling may not be apparent but sluggishness is felt (poor athletic –physical performance). By tying up excess fat and priming the immuno action of IgA ImmunoFiber can have a fantastic effect on this whole process. With the fat load reduced to a level that the body can transport efficiently, the immune system is free to operate. IgA is primed and cleansing the interstitial environment and with the vessels unclogged the draining action (cleansing) is allowed to proceed. This is the single most pronounced effect of ImmunoFiber that I observe on a regular basis. The difference between hamburger, gravy

sausages, rich pies, pastries, fried foods, etc., with and without ImmunoFiber is



This person has a smooth flowing lymphatic system with manageable levels of fat as chylomicrons transported along with flushing IgA to the heart. This person feels agile and energetic.

enormous. With ImmunoFiber, you feel light on your feet and energetic. Without ImmunoFiber, you feel bloated and sluggish. More importantly, this is a bioindicator that the average person can follow. If the bloating occurs, you can be pretty sure that serum cholesterol is high, immuno function reduced, strain on heart and other bodily organs increased. As stated earlier, the number one day for heart attack in America is the day after



A bowel on Thanksgiving morning could be a life saver!

Thanksgiving. I think that ImmunoFiber in pumpkin pie, gravies, mash potatoes, etc., or a big bowel of ImmunoGrain cereal first thing in the morning would result in some of these lives being saved.

Autoimmune Diseases and Cancer, The Result of Poor Immunological Flushing?

I have come to believe that the occurrence of every type of noncongenital illness can be described in terms of deficit flushing action. Thus a sufficient flushing action (enough to clear a particular problem) should result in prevention of all disease. However, once a disease has established itself flushing may help, but it probably cannot undo the consequences of structural damage. The so-

called autoimmune diseases are an example of an uncleared, lingering infection. These autoimmune diseases such as rheumatoid arthritis, lupus erythematosus, Addison's disease, celiac disease, Grave's disease, etc. are very confusing in that one is led to believe that the body is attacking itself and this is really not the case. In all these diseases the body is unable to clear an irritant after going to more and more extreme measures. Often creating more damage. The immune system just keeps responding with drastic measures to a problem it cannot flush away. Although it is fair to say that the immune system was not designed to attack self-type tissue, it was designed to remove and clear out self-generated cellular debris. The disease, Lupus, is thought to arise from a failure of the body to remove dead or dying host cells (a failure to recycle). As this debris deteriorates rogue material is generated that is attacked by the immune system. Proper routine flushing of used up cells would solve this problem.

Cancers and tumors associated with all of the mucosal surfaced organs (often sites of disease) are clearly due to initial irritations caused by disease and toxins that are not flushed away. These fester resulting in continued attack by the violent arm of the immune system resulting in more wounding – more confusion of the whole system – eventually the body actually vascularizes and then calcifies these problems which if not fully encapsulated (sealed off) become cancers. The solution to this sort of problem is to flush it away with IgA.

Disease and toxins that penetrate the outer portion of the third line of defense and enter the interstitium are shipped to the lymph nodes. Hopefully neutralization and elimination is achieved there. We can feel this activity when we have swollen lymph nodes that doctors so often check for. The lymph nodes are collecting and fighting disease, toxins or irritants. If the problem is not cleared swollen lymph nodes become lymphomas resulting in problems like tumors and cancers that from sloughed off cells can migrate all over the interstitial lymphoid system. If they get back to the bone marrow leukemia can result. Again, good lymphatic, interstitial and blood stream flushing by IgA prevent all this from occurring.

Allergies like asthma, hay fever, and skin rashes, in most cases are the result of one of two things, insufficient IgA or excessive IgE. With enough IgA flushing of the subcutaneous zone there is no antigen available for complexing with the IgE to start off the allergic reaction. Again, efficient flushing prevents the whole problem. Remember, sharks don't get allergies either.

We have gone pretty far a field discussing fat transport, heart disease, lymphatic flushing, cancer, autoimmune disease, allergies, and more. But, remember,

A bowl will flush away adhesions that are the root cause of autoimmune disease like arthritis, rheumatism, cancer and allergies.



ImmunoFiber acts by regulating the flow of all materials to the intestinal walls, preventing system overload. And then, in its role as the universal adjuvant, it conditions an immunological flushing response to all materials including microbes and toxins. In this way, ImmunoFiber has a role in preventing any type of disease by flushing it away. Remember, regardless of the disease, if it doesn't stick somewhere, it can't hurt you. Again, all that is

necessary to realize this effect for most people is 1.5 to 3 oz daily of ImmunoGrain as the hot cereal or some other ImmunoFiber product.

10. ImmunoFiber's Impact on Your Life – Questions and Answers

I hope that I have clearly described how ImmunoFiber works. We will not be introducing any new concepts, but in this section we will talk about how ImmunoFiber can impact various health-related situations and answer some common questions that we get on ImmunoFiber.

Why Do I Get Colds in the Winter? Can ImmunoFiber Help Me?

Yes, ImmunoFiber can help you. But remember what the doctor says when you are sick with a cold or flu. Take Lots of Fluids! You cannot flush a dehydrated body. This is because water is an essential part of the flushing action associated with ImmunoFiber,

IgA and mucous. In a dehydrated person, the mucous/IgA complex can go from a positive flushing agent to a sticky adhesion agent. As it dehydrates it can cause adhesions as globs of mucous with trapped microbes and toxins. This is what happens in your nasal membranes as we go from summer and fall to winter (cold and flu season). The dryness of the air results in dried up membranes. The mucous becomes a gel holding microbes and toxins. No longer an agent of flushing it becomes an adhesion agent creating a home for disease. When seasons change, make sure you change with them. More ImmunoFiber, more water. It should be noted that excessive heat and dryness can cause these same conditions (a summer cold). Dryness is very easy to gauge. If your nose and throat start to dry out, take more water. With respect to ImmunoFiber, plenty of water will increase the effectiveness greatly. For every ounce of wholegrain ImmunoFiber, take 8 to 16 ounces of water. More if you can. Especially during periods of dryness like the cold and flu season.

If I Eat ImmunoFiber Will I live Forever?

No. The immune system declines after puberty and really fades after 40. It just dries up. ImmunoFiber can't stop this, but it can slow the drying process and peak whatever immune functions you might have. The bible says a full lifetime is 120 years. The people who live in places noted for longevity – high fiber, natural diet often in mountains where there is no pollution peak at about 120. If you're shooting at longevity, 120 is a reasonable goal. And ImmunoFiber will certainly help, but other things like exercise, other nutritional food combinations, low stress, etc. will need to be incorporated along with a lot of luck and genetic predisposition.

Dieting and ImmunoFiber: Will It Help Me Lose Weight?

Probably not. Some people lose weight while eating ImmunoFiber, but while it will regulate the flow of sugars, fats and protein into the blood stream, it will not cure your craving for these things. The action of ImmunoFiber is to enhance bodily function, vigor, and health – not weight loss. However, ImmunoFiber can be useful to improve the effect of any chosen diet.

A well balanced diet that includes protein, fat, carbohydrate, vitamins, minerals and fiber should be the goal of everyone. But instead, we see an endless array of fad diets based on largely cosmetic considerations. The pendulum swings back and forth between high protein and high carbohydrate diets. A high fat diet once in a great while also surfaces as an extreme fad. ImmunoFiber has a neutral stance among all of the diets regardless of the food type, protein, fat, carbohydrate. ImmunoFiber will regulate the flow into the blood stream. It should make any type of diet safer and more effective. We have talked about the problems associated with the rapid absorption of fat and carbohydrates, but there are many problems with the absorption of intact proteins from materials such as wheat and milk that cause serious disease problems, again related to autoimmunity problems. These are non-self proteins being attacked by the immune system, resulting in damaging hypersensitive reactions. The fact is that we need a balanced diet of fat, carbohydrate and protein. The cell membrane of every cell in our body is largely composed of fat. And the turnover rate of many cells is rapid. The problem is the form in which these materials are consumed. Refined carbohydrates, fats and proteins are too rapidly digested overloading the body's processing systems resulting in all sorts of autoimmune diseases and chronic ailments. All these foods were meant to be eaten in forms that slow down digestion and absorption. The beauty of ImmunoFiber is that it should enhance any sort of diet and prevent problems associated with excessive consumption of any particular class of food – fat, carbohydrate, protein.

If you actually read or watch televised presentations on these super diets, high protein, high starch, even high fat, they all look pretty much alike in one respect. They all recommend a healthy dose of fiber is used to regulate the intake of fat, starch and protein. As stated earlier, our bodies were not designed for over-processed foods. The picture of Adam and Eve in the garden of Eden eating fruits and vegetables in a perfect state of bliss is not fanciful as far human physiology is concerned, it's factual.

If I Eat ImmunoFiber, Will I Ever Get Sick?

Well, I want to say no, but, of course, the answer is yes. There are just too many ways to get sick. And of course, we all get old and die of something. However, I have found

that in general if you're on ImmunoFiber and take care of yourself (keep warm, keep dry, eat properly and drink lots of water), you generally won't get sick. If you see something coming on, get rest, and take lots of ImmunoFiber and water, then you generally won't pick up what's going around. If you do it will be gone soon.

If I'm Stressed Out, Will ImmunoFiber Work?

Not as good as we would like. One of the great quirk/mysteries of our body is that stress (which is anything that causes release of adrenaline) inactivates the immune system, often long enough for some new pathogen or a resident pathogen (being held in check) to take hold. Adrenal exhaustion is a term that describes this phenomena (too much excitement, get run down, get sick). If you feel something coming on, in order for ImmunoFiber to work, you need water and a good nights sleep to go along with it.

Can ImmunoFiber Lower Cholesterol Too Much?

No. Our experience is that people with very elevated levels of cholesterol can see drops of 100 points in total serum cholesterol – 320 to 220 for example; less elevated levels will often see a 30 to 40 point drop, 260 to 220 or 220 to 180. People with low cholesterol will see no drop at all, 160 to 160. If there is a problem, ImmunoFiber will help. If there is not a problem, it does no harm. If it ain't broke, ImmunoFiber doesn't mess it up. That's our experience.

Should Cholesterol be Reduced to the Lowest Possible Levels

No. That's like an anorexic saying you can't be too thin. Cholesterol is a main component in every cell in the body. It is also the precursor to many hormones and neurostimulators. It has a very important role in the body. The problem is that refined oils and rich fatty foods taken with no ImmunoFiber-like buffering just overload the system. Research has shown repeatedly that brain function falls off (measured as the speed of decision making) as cholesterol declines from an optimum level of 180 to 220 points. At levels below 160 there is a definite trend towards depression, suicide and poor decision making tendencies, resulting in increased mortality due to violent causes. These troubling tendencies will continue to be studied. The point here is that

ImmunoFiber is a naturally occurring substance with a history (going back to the Bible) of inducing vigor and mental acuity. As part of any kind of sensible diet, weird and unnatural lowering of cholesterol will not occur. I believe that if your body is flushing well, that is, low blood pressure, smooth regular bowel movements, good urination, no nasal or lung congestion, and no chronic illness and you're mentally sharp, then your cholesterol level almost certainly has to be at a good level for you.

Is It Good for the Immune System To Be On at All Times?

The answer is yes and no.

Yes for the self (oral) inoculation and flushing IgA/mucous system that we have focused on in this book. It is essential to identify the continuing flow of good guys and bad guys and to flush the problems away. When Acquired Immune Deficiency Syndrome (AIDS) became a problem, we quickly learned that with a degraded immune system even harmless resident microbes became lethal. This is why the cells of the skin and mucosa should be in a constant state of controlled inflammation (have good color) at all times. They need to constantly be sorting good guys from bad guys and take appropriate flushing action.

No for the IgE and the IgG systems which create violent killing reactions that damage host as well as pathogen. This is like a pack of hired guns who shoot anything that moves. You do not want these turned on except in certain places and under certain circumstances where an emergency action is needed. These systems should not be turned on at all times.

Decongestants and Antihistamines: What is Their Effect on ImmunoFiber/IgA-Mediated Flushing?

Since one of the main benefits of ImmunoFiber is the IgA-mediated flushing of pathogenic microbes, antigens (allergens), and toxins from the mucosal surfaces of the nose, it is reasonable to ask what effect decongestants and antihistamines have on this activity. Actually this line of thought was presented to me as a diagnosis by an MD who

noted decongestant and antihistamine combinations have the unwanted effect of drying our nasal passages which prevents flushing of microbes, allergens, and toxins, a condition from which my ImmunoFiber consuming son was suffering. My son had effectively fought off the worst of an infection but had not flushed the debris from his nasal passages and it was festering. Lots of liquid and saline nose drops did the job. The taking of decongestant/antihistamine was stopped. The doctor's diagnosis rang very true for observations over the years where ImmunoFiber fought off a main infection only to have some lingering side-effects. Or more importantly, in cases where ImmunoFiber users reported a failure while taking over the counter decongestants. If the main action of ImmunoFiber is flushing, then anything that prevents flushing will thwart that action.

In my case I have stopped taking decongestants and antihistamines. I have a history of acute asthma and some associated hay fever. I have never had an asthma attack that was not preceded by nasal irritation and subsequent congestion (I am allergic to ragweed pollen, mold, house dust, animal dander, etc.). Some times the asthma comes on very quickly but nasal symptoms always precede it. As an agricultural researcher, I am exposed to a wide range of allergens (grain dust, grain molds, dust mite frass, etc.). Since I have begun using ImmunoFiber and have become aware that the immunizing mechanism for allergies and illness is the same, so now I treat them the same as they come on. I start taking a lot of ImmunoFiber as flakes: raw, in soup, mixed in every sort of food, and most importantly, as a bowl of hot barley cereal in the morning and a big bowl just before bedtime. I can feel the mucous and histamine moving antigens (microbes, allergens, toxins) down my throat to my stomach, but now I know that that is good I don't want to stop this with decongestants or antihistamines. I want this stuff moved to my stomach and intestines where it is processed and the appropriate flushing IgA produced. Usually in 24 hours, all symptoms are gone. I never really get sick and if ImmunoFiber does not work in 24 hours I start thinking about seeing a doctor. Remember, ImmunoFiber is not a cure all. It will reduce visits to the doctor (by a lot) for many, but it should work fast and if it doesn't, see a doctor. Let me reiterate, use ImmunoFiber to keep yourself well. If you're sick see a doctor, that's what I do.

There is another thing about decongestants. They are powerful adrenogenic drugs, that is, they are like adrenalin, and we know that adrenalin turns off the immune system. Remember, we talked about sickness often following adrenal exhaustion (a proven phenomenon). So in taking decongestants, we are turning off what we are trying to turn on with ImmunoFiber. It should be remembered that these decongestants are a form (a milder form) of speed (methamphetamine). The original speed freaks went from drug store to drug store clearing the shelves of the nasal decongestant dexadrin (speed). The industry tried but there was no way to stop the abuse, and the product had to be pulled from the shelves. This is another reason I have stopped taking decongestants.

ImmunoFiber and the Skin

In its role as an immunoactivator of the flushing IgA immune system, blood flow to the epidermal surfaces inside the body (mucosal surfaces) and to some extent those on the outside of the body (skin) is enhanced giving a nice pink or golden glow. You cannot have peak immunoactivation without good blood flow. One of the things that I note first in seeing people, especially people over 50 who have been using ImmunoFiber is a good color all over especially the face. Many users report that wound healing is enhanced with use of ImmunoFiber. It is often noted that cold sores heal quickly. Good blood flow is needed to achieve this effect. We have talked about ImmunoFiber as a stimulator of the IgA/mucous flushing system. However, if there are open wounds on mucosal surfaces ImmunoFiber will activate the IgG immune system resulting in inflammation associated with wound healing. The same is true if ImmunoFiber is used topically on the skin. If there is a festering wound soaking it in an ImmunoFiber preparation can result in inflammation followed by healing. For cases of mild arthritis pain soaking 5-10 minutes, 3 or 4 times a day, can often relieve symptoms with much improved flexibility and skin suppleness with a nice color, pink to golden, evidence of good blood flow short of inflammation, this is my experience. Again I recommend ImmunoFiber as a consumable food and food ingredient. But topical use for skin, surface wounds and joint stiffness has some value also. This is most likely due to the

immuno-cells just below the skin surface, langerhan cells, which are activated by the ImmunoFiber in the same manner as the macrophages of the intestines.

Oral Inoculation – Can You Be TOO Clean?

If our bodies were meant to collect the materials from our environment via the GI tract immunocollectors for complementation and processing for flushing IgA antibodies, then if we are too clean and we eat food that is highly processed and sterile, could we fail to sample our environment and be unprepared for microbial attack when it finally occurs?

It has been suggested that this is one of the reasons that allergies are on the rise in the affluent, industrialized world. From Immunology (Klein and Horejsi, 1997)

“There is a striking increase in allergies in most developed nations which is inversely correlated with the decrease in serious childhood disease and which parallels greatly increased hygiene standards... Thus, too much hygiene in childhood may, paradoxically, be one of the factors contributing to allergy.”

Jesus also had something to say about this after his disciples were criticized for eating with dirty hands (Matthew 15:17-20):

“Do not ye yet understand, that whatsoever entereth in at the mouth goeth into the belly, and is cast out into the draught?” but these things which proceedeth out of the mouth come forth from the heart; and they defile the man. For out of the heart proceed evil thoughts, murders, adulteries, fornications, thefts, false witness, blasphemies: These are the things which defile a man: but to eat with unwashen hands defileth not a man.”

Wash your hands, have fun and take ImmunoFiber, and you'll be all right.

Can I Get This Immuno/Flushing Effect with Other Things Besides ImmunoFiber?

Intellectually, I must say yes. If you live like Adam and Eve and ate nothing but vegetables, nuts, fruits, berries and grains, avoided pollution and stress, theoretically it is possible to achieve the flushing action of ImmunoFiber. There are other good foods out there. However, in actual practice, I have found nothing that performs like

Immunograin. I have tried orange juice, whole grain foods, oat products, other viscous fiber like Metamucil, vitamins, minerals, an apple a day, meditation, and while all are good, I have never found anything that could turn illness (any illness) around in 24 hours like ImmunoFiber. I think that this is especially true for people like myself with a less than perfect diet.

Is There an Anthropological Basis for ImmunoFiber?

Since I've taken somewhat of an anthropological stance on all of this you might wonder if I have looked for ImmunoFiber in antiquity? I have but I don't have enough information to make a definite conclusion. But the base breeding material to produce Immunograin came from lands like Nepal, Tibet, northern India, places sometimes noted for longevity of life. It is in these places that naked and waxy barleys have been consumed for years. There is definitely a link between consumption of barley and other rough grains (rye and oats) in the coarsest of whole grain breads and extreme longevity. My opinion is that the ImmunoFiber effects that we are seeing today are at least hinted at by studies of the hidden away "Shangri-La" type communities.

How Can I Know That ImmunoFiber Is Working?

That's easy, your body will tell you. One of the things that a lot of people do not understand is that the greatest part of doctoring is conducted by the patient. No one is a better judge of how you feel than you, yourself. In most cases when you go to a doctor he asks you about your symptoms. If you give him a good description he can check it out and provide a remedy. The most difficult cases for a doctor are those where you are not clear on the symptoms. If you don't tell them clearly what is wrong, it is much more difficult for them to form a diagnosis. At any time a person should have some indications to know how he is doing. Bio-indicators, as I call them. I'm going to provide some here as they pertain to ImmunoFiber. We have described the mode of action of ImmunoFiber as the flushing of excess fats and cholesterol from the body and the activation of (GI tract IgA) the immune system. Realizing that both these actions may be (and probably are) interrelated. However, having said that, most of the beneficial effects of ImmunoFiber can be explained by the flushing action as it affects fat, cholesterol and

other fat like complexes. Many years ago my wife had problems with elimination after an operation. Her gynecologist, Dr. Hinderstein told the story of the little old ladies in the Catskills, having hot water and prune juice to relax and loosen their bowels. They knew better than anyone that good health started with a good bowel movement every day. How prophetic. If anything, it is an understatement. Not only is excess fat and cholesterol reabsorbed into the body, clogging things up everywhere, but we now know that if feces are allowed to remain in the intestines too long, all sorts of microbes, toxins and other unwanted elements somehow penetrate the mucosal barrier and enter the body cavity, blood stream and organs. Many allergic reactions and autoimmune disorders are associated with allergens that can enter the body in this fashion. To make matters worse, prolonged retention of feces and those unwanted agents of illness that find their way into the body in time will begin to damage the cells of the intestinal walls allowing more unwanted material to seep into the body. It is a vicious cycle.

So if you are taking ImmunoFiber the first thing that you must monitor is your bowel movements. Before you flush your stools bye-bye, take a good look at them. The first thing that you should notice is that you will indeed have a bowel movement everyday. The β -glucan is a lubricant, and while chain length is broken down, it does survive the digestive process, so on top of everything else you should experience a smooth well lubricated bowel movement. It should not be dry and hard. The stools should be fairly soft and brown in color and the water around them should be turning a sunrise yellow color. I call this the Tequila Sunrise effect. The yellow color is associated with bile salts and the associated cholesterol used in the digestion of fats. It is the reabsorption of the cholesterol portion of the mixture that causes elevated serum cholesterol. So if you see a good brown stool with yellow color streaming off then you know that you are excreting cholesterol. If you have a hard black stool that sinks like a rock, you are reabsorbing all your bile salts (cholesterol). It also implies that your regularity may be off.

Now the other thing to look at is the flotation characteristics of the stools. We already know that a hard, dark sinking stool is bad, but there is a whole range of densities. If the

stool is floating and yellow, that is a sign that not only are you excreting plenty of cholesterol, but also enough fat to result in a stool that is lighter than water.

One other indicator that ImmunoFiber is working is the “farting horse never wearies” syndrome. If the ImmunoFiber is removing excess fat and cholesterol to the colon area of the intestines, microbes in that section will begin to break this material down, along with some of the ImmunoFiber resulting in the production of methane gas and CO₂. This is good. It’s a sign that you are a healthy animal. In time this gas production decreases for most people.

Now, in the case when you feel an illness coming on, or are already ill and you want to flush away microbes and toxins, the indicator that you want to check is your teeth. Under these conditions, especially, the plaque build up on your teeth is substantial. The β-glucan should give your teeth a smooth, clean feel (with your tongue). The plaque on your teeth is a build-up of bacteria and waste materials on teeth and mouth and gives an insight into the adhesions that occur everywhere in your body when you have microbial infections (disease). Also, you should also feel clearing and good inhalation in your nasal passages and lungs – clear breathing as you sleep. In your day to day life, smaller, less obvious indicators are noted. When one incorporates ImmunoFiber with high fat foods, like hamburger, 15% of hot barley cereal mixed with hamburger, a sort of bloat that one gets from eating such foods does not occur. In older people, regular consumption results in freedom of movement in joints and reduction of back soreness. People often report that they feel more energetic and mentally alert.

How Much ImmunoFiber Should I Eat?

Remember, this is a wholesome whole grain food. Some of the simplest and most healthy people use this sort of material as the basis of their diet, rice grain in the Orient and bread in the West. So remember, that in the end it is just food, you can eat a lot of it. But using the largely whole grain hot barley cereal marketed by NuWorld Nutrition, as an example, I think most of the benefits can be obtained by eating just 2 ounces every other day. I myself like to eat 4 ounces every other day. If you feel an illness coming on,

or there are many sick people around you (something is going around), or it is just a stressful time, I'd take more - double your intake. I think that getting some into you just before bed can be very important. It works (seems very active) especially well as you sleep. Again I often will greatly increase my consumption eating up to a pound a day with nothing but good effects. The more you eat the more efficient your body will become at burning the starch, thus the more you can eat. I know some people who take as little as a tablespoon everyday, sprinkled on salad or cereal and feel that they see full benefit. While I believe that the hot cereal is a very good way (maybe the best way) to consume ImmunoFiber, it can be used as food ingredient in many ways. This material can be put into any baked goods, sauces, ground meats - almost anything. To prepare, remember, wet, not dry heat. You don't want to roast this material. Baking is ok. It can be eaten straight as a granola type food, and since it ties up fat, you can sweeten and even add some nuts and even oil and still get benefits. ImmunoFiber in waxy hulless barley is a very versatile foodstuff. Much research is focusing on preparation of purified ImmunoFiber that can be used as a food ingredient, an additive (fat substitute/nutritional agent and high-viscosity flours) that would allow all sorts of food formulations. The purified material (isolate) could even find direct medicinal uses as a type of natural medicine. This is still down the road, although this group (Castle Dome Foods) has patents on all these types of products. At this point, the hot barley cereal represents an excellent vehicle for incorporation of ImmunoFiber into the diet and we know it works. However, in the future this wholesome natural material can be incorporated into almost all processed foods (in one form or another) and thus great health benefits can be realized without any sacrifices in food quality. For example, an ImmunoFiber line of pasta products is on the drawing board and when available it will provide a source of ImmunoFiber that is totally masked in good tasting pasta - you can't even tell it is in there. But, when you get done with your spaghetti, rather than feeling full and bloated, you'll be ready to dance with a clear heart. When Richard Mather brought the pilgrims to America he said that the universal tonic was needed to keep them strong and healthy, that was a very low alcoholic content, high β -glucan beer. The β -glucan within was the major ingredient. This was the main health ingredient going back to Antiquity. The incorporation of ImmunoFiber into your diet recreates the all-purpose

health tonic that kept people healthy in a safe, natural way for millennia. You should try some and see if it doesn't work for you!

11. Immunofiber Foods

Over the years we've learned a few things about β -glucan fiber. It is accumulated in waxy hulless barley (WHB). But not all varieties of WHB produce it to the same level. To maximize ImmunoFiber production requires plant breeding work. Some immuno barleys are better than others. We want the best. Environment plays a big role in the production of ImmunoFiber. It is accumulated in environments of



good fertility, good subsoil moisture, but with a surrounding air of low humidity. The semi-arid intermountain west is good, irrigated production of same is better, and the irrigated Southwest is perfect. ImmunoFiber cannot be produced consistently east of the Missouri Plateau. It cannot be produced in northern or central Europe. An environment that provides seed filling with low relative humidity surrounding the filling seed is optimum and essential in the production of ImmunoFiber. Any moisture after full seed maturity activates enzymes in the seed and exogenous microbial enzymes that begin to degrade β -glucan fiber with viscosity quickly reduced to nothing. Remember without viscosity, the functionality of ImmunoFiber is lost. Our organization has been granted a number of patents on the production of high quality ImmunoFiber food and food ingredients. All these products which include high viscosity ImmunoFiber, flours, concentrates, flakes (to be used as a food ingredient or directly as a hot breakfast cereal), purified ImmunoFiber isolates, are based on one principal, preservation of intact β -glucan fiber (ImmunoFiber) insuring that products are fully functional which makes these products totally different from anything on the market today. Contrast this with the activities of the food oat industry (the only other directly consumed grain that contains high levels of β -glucan). In the past the oat producers have bought the cheapest oats they can find, usually from Europe, usually Scandinavia. Coming from a relatively wet, high humidity, non-ImmunoFiber yielding environment.

More recently, Canada has supplied much of the food oats. But, again, there is little or no attempt to assess β -glucan quality. Since oats have relatively high levels of oil, 7%, and storage rancidity is a real problem, the oats are heat treated to kill rancidity forming enzymes. This breaks up β -glucan fiber and greatly reduces β -glucan functionality. It is just the opposite with ImmunoFiber barley and ImmunoFiber function where the production of intact (highly active) β -glucan fiber is maximized at every step of production from breeding, planting, growing, and processing. It is only by insuring quality in this way as a patented product derived from a patented process that full product functionality can be achieved. This is what we have achieved with ImmunoFiber. We are the only supplier of this patented material. This is the only way that you the consumer can get a consistently effective product. Without viscosity there is little functionality to oat and barley products. The problem with big food producers and grain providers is that they want to commoditize everything. Oats is oats and barley is barley. And they want multiple suppliers to supply it cheaply. Things like Immuno barley are nightmares that they do not want to contend with. That is why a smaller but knowledgeable dedicated food company with patented processes is needed to get a special product like this out to the consumer.

Recipes

Flakes

The ImmunoFiber in waxy hullless barley can be consumed in an infinite variety of ways.



The instant flake that we talk about can be consumed as a hot cereal prepared on the stovetop or in a microwave with water or milk and your preference for flavorings.



Possible sweeteners are

sugar, brown sugar, honey, raisins, cranberries, bananas, berries, jams or apple butter (1 tsp.). Some folks prefer the flavor of a little margarine rather than sweet. This is okay too as the fiber will help to carry the fat out of your system.

The flakes can also be used as an ingredient in any sort of baked goods. The flakes are suspended in these products and are not a structural constituent. Thus, just about any baked product can carry 15-30% of Immunoflakes. Especially good are breads, both yeast and quick, pancakes, muffins and cookies.

Select Fiber Blueberry Muffins

3/4 cup Select Fiber Cereal Flakes
 2 tsp cinnamon
 1 1/2 cup all-purpose flour
 2 egg whites or 1 egg
 1 tbs baking powder
 1 tbs oil
 1/2 tsp salt
 1 1/3 cup skim milk
 2/3 cup sugar
 1/2 cup blueberries*



1.1g fiber per muffin

Preheat oven to 400°. In a mixing bowl combine Select Fiber Cereal Flakes, all-purpose flour, baking powder, salt, sugar and cinnamon. Mix. In a separate bowl, combine egg whites, oil and skim milk. Mix well. Add to dry ingredients and stir until moistened. Fold in blueberries. Fill greased muffin pans to the top with batter and bake about 20 minutes. Makes 12 muffins

*For Apple Cinnamon muffins, substitute 1 cup chopped apples, peeled for the 1/2 cup blueberries.

These flakes can also be added to a soup about 1/8 to 1/4 cup per 3-4 cups of soup. As mentioned earlier, you get the goodness of high cartilage based beef and chicken soup with the added benefits of ImmunoFiber.

Another novel use is the blending of these flakes with hamburger. The β -glucan creates a non-fat, juicy effect – and ties up fat quickly turning the hamburger into a fat sucking up ImmunoBurger. In taste tests these sort of hamburgers with 15-20% flakes are often preferred to the whole meat burgers. In the preparation of this product another type of ImmunoFiber ingredient needs to be introduced – the ImmunoKibble – kibbles are just pieces of ImmunoGrain cut into 1-2 mm squares – these are especially effective in blending with hamburger to produce the ImmunoBurgers – the size of these

bits is about the same as the size of the bits of meat in a burger. Thus you really can't even tell that they are there.

ImmunoFiber Cookies

1 cup all-purpose flour
 1/2 cup margarine
 2 1/4 cups ImmunoFiber Cereal
 Flakes
 1/4 tsp. nutmeg
 2/3 cup granulated sugar
 1/3 cup honey
 1/2 tsp. salt
 2 egg whites or 1 egg
 1/2 tsp. baking soda



1g fiber per
 cookie

1 tsp. vanilla
 1 tsp. cinnamon
 1/2 cup raisins*

Preheat oven to 375° F. Combine flour, baking soda, salt, cinnamon and nutmeg in a bowl. In a separate bowl, cream honey margarine, sugars, egg and vanilla until fluffy. Add flour mixture, raisins and stir until well mixed. Add ImmunoFiber Flakes and mix well. Drop by rounded teaspoonful onto a greased cookie sheet. Press cookies slightly after placing on cookie sheet. Bake 8-10 minutes. Makes 3 dozen cookies.

*For chocolate chip cookies substitute 1/2 semi-sweet chocolate chips for 1/2 cup raisins.

Flour

High viscosity ImmunoFlour is another form of ImmunoFiber. It is a more concentrated form of ImmunoFiber and can be used to produce baked goods without the coarser flake type texture. And higher levels of ImmunoFiber. The flour can be used for any baked goods similar to the flakes. It can be used in quick breads by substituting the barley flour for 1/2 of the white flour and substituting 1/2 of the oil with water. The flour also works well in blended beverages and also in sauces for thickening – spaghetti sauce, gravies – turning them from fat loading devices to Immuno health sources.



Although only an experimental product at this point, the high viscosity immuno flour can be used to produce pastas, spaghetti, macaroni etc. converting a meal of spaghetti and meatballs into an immunological extravaganza.



ImmunoFiber Bread (for breadmakers)

1 ¼ cup water	2 cups bread flour
1 tsp salt	1 cup ImmunoFiber flour
2 Tbs sugar	1 package quick rising yeast
1 Tbs canola oil	

Follow directions for your breadmaker. The most consistent loaf is produced by combining the water, oil, salt and sugar in the pan, then add the bread flour followed by the barley flour and finally the yeast on top. This makes a loaf which is about 1 1/3 lb.

1.0 g fiber per 2 ounce slice

Fruit Nut Loaf

2 cups ImmunoFiber flour	1/2 cup walnuts
1 large egg	1/2 cup raisins or dates
1/2 cup sugar	1 tsp. baking soda
2 large bananas (ripe)	2 tsp. baking powder
2 tbs. oil	

Sift flour once before using. Beat egg slightly. Add sugar, oil and chopped bananas. Beat until bananas are broken up. Beat in flour, soda and baking powder. Stir in walnuts and raisins. Pour batter into 8" x 4" x 2" pan. Bake at 350° F for 50-60 minutes.

Recipe from Centennial Chefs Cookbook

Pearl Barley

Pearled ImmunoBarley can be used in the same way that normal pearled barley is used in soups, salads and casseroles. Many excellent recipes are available from the National Barley Foods Council (905 W. Riverside, Suite 501, Spokane, Washington 99201).



A highly refined and polished form (ImmunoRice) is produced in Japan to look like rice.

Barley & Lentil Supper Soup*

2 to 3 cloves of garlic, finely chopped	
1 cup chopped onion	
2 medium carrots, peeled and chopped	1 tsp. curry powder
1 stalk celery, chopped	1 1/2 tsp. dried leaf thyme, crushed
7 cups salt-reduced, fat-free chicken broth divided	1 bay leaf
1 cup lentils rinsed	1 tbs. finely chopped Italian parsley
1 1/2 cup button mushrooms, sliced	2 tbs. fresh lemon juice
1 tbs. tomato paste	1 tbs. Worcestershire sauce
1/2 cup uncooked ImmunoFiber pearl barley	1 tsp. salt 1/2tsp. ground black pepper

Spray 4-quart saucepan with non-stick cooking spray; add garlic and onion and sauté 4 minutes, stirring occasionally. Add carrots and celery; sauté 3 minutes longer, stirring occasionally. Mix in 6 cups broth, mushrooms, lentils, pearl barley, tomato paste, thyme, curry powder and bay leaf. Bring to boil. Reduce heat and simmer 60 to 70 minutes or until lentils and barley are tender, but not mushy. Blend remaining broth, lemon juice, Worcestershire sauce, salt and pepper. Remove bay leaf and serve. Makes 8 servings.

10g fiber per serving

Recipe provided by The National Barley Foods Council, Spokane Washington (509) 456-4400

12. ImmunoWater

Finally a tonical beverage can be produced from the ImmunoGrain; pearled ImmunoGrain, ImmunoKibbles, or the ImmunoFlakes – called ImmunoWater. It is based on barley water recipes that have been used for millennia as tonical beverages. The ImmunoWater is the same but more potent.

Historical anecdotes about the medicinal benefits of barley refer to a nonalcoholic beverage simply called Barley Water. In Britain to this day, the water in which the barley is cooked is alleged to cure stomach aches, promote blemish-free complexions and soothe the urinary tract. Medicinal drinks made of barley and water go back to the ancient Romans, who drank a barley-and-herb beverage known as tisana (hence the French tisane or infusion - it usually refers to an herb tea, but in its medieval form it was an herbed barley-water). The French 'orgemonde' barley water flavored with almonds, Italian 'orzata' and Spanish 'horchata' (all derived from the Latin *Hordeum*) are nonalcoholic beverages made from barley and touted as a folk remedy for numerous ailments including cancer and urinary tract irritations. Iranians have a saying, "What has disease to do with men who live upon barley-bread and buttermilk?"

I can't speak on buttermilk, but I do know barley. Clinical studies on mice have shown that feeding of barley reduces the number and size of tumors (). Does barley water cure cancer? Probably not, but the compounds in barley which are working in the mice would certainly be found in barley water (simply made by boiling barley in water). Folks who have used barley water during chemotherapy attest to less abdominal pain, and fewer intestinal problems, nausea, and mouth sores.

β -glucan is a major component of barley water – increasing in concentration with extraction time and with the use of more refined materials. When the grain was boiled for 1 hour only 5% of the β -glucan of the grain was available in the barley water. This increased to 15% by boiling for 3 hours. This did not change when the grain was

allowed to sit in the water overnight after being boiled. Boiling barley grits (cracked barley) released four times as much β -glucan into the barley water. Boiling for 1 hour released 20% and 3 hours released 38%. Barley water made from the barley flakes boiled for 1 hour contained over 50% of the β -glucan found in the flakes. Allowing these products to sit overnight released slightly more but not significantly more. There are also other healthy compounds present in ImmunoWater – especially potent antioxidants from the outer layer of the grain.

Regardless of how it is made ImmunoWater is a tasty beverage something like a sweet bland tea (ice or hot). It too can be blended with any other beverages – tomato juice, orange juice, beer, etc. After a 7-8 quart batch is made, it can be stored in the refrigerator and used as needed for about a week. I recommend making the barley water from the grain because of the testimonials but use the flakes if the grain is not available or if more fiber is desired.

In many ways the ImmunoWater is a very special product because people who are sick with cancer or going through chemotherapy for cancer often consume this product. Stories of remission and great relief of side effects associated with chemotherapy have been reported. The recipes are followed by the testimonials of users

Barley Water Recipes

Stovetop – grain

Boil: 4 qts of water in a stainless steel or glass kettle

Add: 1 cup hulless barley

Simmer 3 hours (add water if it evaporates) and, if desired,turn off heat and allow to sit overnight.

Strain through a colander.

Stovetop – grits or flakes

Boil: 4 qts of water in a stainless steel or glass kettle

Add: ½ cup of barley grits or flakes

Simmer 1 hour (add water if it evaporates) and strain through a slotted sieve.

Crock Pot

Combine: 4 qts water and 1 cup of hulless barley or ½ cup of barley flakes or grits.

Cook overnight on high. Strain through a colander or slotted sieve.

In general:

- Store water in refrigerator until used (can be kept up to 5 days).
- For all of the methods the barley can be saved to eat if desired.
- Variations: Add lemon, orange, cranberry or other juices, vitamin C, sugar, honey, spices for flavor.

Barley Water Testimonials

- Anon: I was given six treatments, each three weeks apart and I recommend:
 - A few days before each treatment, I drank 1-2 pints of barley water each day.
 - On the morning of treatment, (after the blood work is completed), I drank at least 1 pint, then 1-2 pints throughout the rest of the day and evening.
 - Drank 1-2 pints of the barley water for 3-4 days following each treatment.
 - All other days were not as touchy, but if I drank none, stomach pain or feelings of nausea would occur. If this happened, a cup of barley water always made me feel better within 20-30 minutes, and sometimes even sooner. Amazing!
 - Toward the end of the program, I tried going without barley water and drank milk, water, juice, soup, etc. to see if I could get relief from another source. Nothing helped to overcome the discomfort. During the second week following my last treatment, I stayed off barley water for 5 days and was finally forced to drink some because no matter what I did, the discomfort would not go away. One cup of barley water was all I needed to feel better again.

- During four months of treatment, I vomited only twice. I can't say I ever felt 100% or had much energy, but thanks to the barley water, the experience with chemo was much easier than expected. I am also grateful for never having sores in my mouth or the discomfort with my skin that was expected.

- Luisa O:
After going through the bone marrow transplant, I could see the benefits of the barley water. In a day, I would drink 3-4 cups. The barley water alleviated abdominal pain, intestinal problems, nausea, and mouth sores.

- Cindy DQ
Last year I was diagnosed with breast cancer and had a 2 cm lump removed (lumpectomy). I then underwent 3 months of CMF 2% chemotherapy, 5 weeks of radiation, and then 3 more months of CMF. I had surgery to put in a Porta Cath during the first 3 months, due to small veins. I boiled one cup of the barley in a quart of purified water, turned off the burner, and then let it sit on the stove overnight. It was then refrigerated. I drank one to two pints the day before chemo to four days after for each of the twelve treatments. (I have developed a Pavlovian dislike to the taste for I connect it to feeling very ill!) None the less, I did not lose my hair, was nauseated-but manageably (only threw up once and I think my actions brought that on), worked through the whole experience. I had chemo on Friday afternoons and could work by Monday except for the last two treatments. Chemo is designed to make one weak and it did! For the last round, I injected myself with Nupegin (don't know the spelling) for a somewhat low white cell count. A recommendation for anyone in chemo is co-enzyme Q10. It feeds the mitochondria, "the power house of the cell", and does have a positive effect on one's energy levels. I also take about twenty various pills a day. I am in remission, I guess, though with breast cancer it can come back any time. I am taking Tamoxifen and will for 5 years. White cell count is still a bit low (3.8 and

should be 4.2), but talking to my cancer friends, in my age group, white cells counts recover VERY slowly.

13. Testimonials

I've decided to let the following testimonials speak for themselves, with no additions or comments. Many of these have been gathered through the consumption of ImmunoFiber flakes marketed by a friend of mine Wally Coram the last 10 years through his company, NuWorld Nutrition. However, as a lead in I've decided to give my own personal testimonial.

Personal Observations

I have worked with waxy hulless and waxy hulless short awn food products since 1977. It did not start as a health based product. But rather specialty starches, industrial food gums, high maltose syrup, premium animal feed, and others. In the '80's the health issue of lowering cholesterol with the high β -glucan food products following the lead of oats was explored and a number of food products were developed. However, this was not a personal issue to me. I used the high β -glucan foods only to gauge acceptability in the marketplace. However, in 1993, I was given an article - actually a ½ page press release - by Dr. Peter Mansell describing the immuno stimulating properties of β 1,3 – glucan from the cell walls of yeast and other microbes. It seemed to me that the same effect should or could be true for barley (and oats) derived β -glucan. Then, in 1995, I was faced with a personal challenge that (though subsequently was completely successful) I was quite sure would drive me to adrenal exhaustion and an acute lingering summer illness.

I was quite familiar with adrenal exhaustion as a medical term and as something that I was personally prone to. I grew up as a somewhat sickly child. I had two bouts of pneumonia my first year of life. My mother was unable to breast feed me (left me antibody deficient – flushing IgA), we lived with the worst kind of forced air heating in our house, and the pneumonia (breaking the surface of my lung bronchial membranes)

sensitized me to dust, mold and animal dander (this along with a genetic predisposition) resulting in the development of acute asthma. So to make a long story short, I was a sickly kid who got sick a lot with asthma, cold, flu, you name it. Along with this (as a genetic predisposition) I was an annoying hyperactive kid. The kind they want to give Ritalin to today. In those days I was sent to the Dr. for St. Vitas Dance. The only reason any of this is important is that when I got excited (overexcited) over good things or bad, I always got sick with something (always). After a while I learned to try and stay calm because I knew what goes up must come down.

So in 1995 when I tried to unite with my first family, see a daughter I hadn't seen in many years, and mesh two families, I felt certain that I would get very sick. Knowing this I remembered Dr. Mansell's blurb (that's all it was). And I consumed Immunograin flakes constantly, cold from a styrofoam cup. To my total and utter amazement I didn't get sick. In fact I got stronger. And believe me this was stressful and exhausting.

I returned home to fieldwork in Minnesota and North Dakota in July. It was very, very hot and humid (believe it or not) and I really started to feel it. Over the years as I got older, I found that drinking liquids and even taking salt did not help. I got a bloated, overheated feeling. I wondered whether my time as an all weather field worker was coming to an end. Then I thought about the Immuno barley flakes – it was worth a try. Twenty-four hours later to my utter amazement my water regulation problems were over. My two teenage sons were dragging. I was strong. Another very strange thing occurred. In that year there was much Fusarium mold in the fields of wheat and barley. Both my sons showed inherited (so I thought) allergic reactions, hayfever in one, asthma in the other. I had no real problem. I kept consuming ImmunoFiber – immuno barley flakes.

As time went on I noticed that when I got the scratchy throat, the bone tired sore-all-over-feeling – Oh no it's coming on – if I took a big bowl of hot barley cereal with a good nights sleep it went away by morning. When really sick, I found that if I consumed Immuno barley constantly for a full day with a good nights sleep, I could turn back an

illness in progress. To me this was amazing. I had always been the sick one. Now I was taking care of everyone else. I cannot emphasize enough what a drastic turn of events this was.

It appeared that the bacterial infections on mucosal surfaces (nose, throat, lungs) that always followed colds or flu's with me were not happening. Even if I got sick, it was two to three days with no following bacterial infections. I became cocky. People around me took sick and I stayed healthy, untouched. The real climax occurred when a particularly nasty intestinal flu was going around and the entire family very sick. While in bed my wife said "If you don't get this I'll be amazed", and I didn't. Well I probably did but my immune system was so strong that the symptoms were almost nonexistent. At this point I started sharing this information with other people. And these observations were repeated in others with new facets coming to light all the time.

I started noticing that my creaky knees, old basketball wear and tear were much improved. Very noticeable in church where kneeling up and down was becoming a problem – a problem no more. It was hard to put my finger on it, increased energy, an improved body flexibility and lowered blood pressure. All these things occurred when I was taking regular amounts of ImmunoFiber. Of course, it goes without saying that smooth regular passage of stool resulted in improvement of any minor GI tract problems I might have. But it gets more amazing.

My most annoying and persistent problem was reoccurring urinary tract infections. Some cases barely detectable. Some cases clearly bacterial in nature. Antibiotics helped but never solved the problem. My work takes me to the Mexican border. And I remember I was always tempted to buy massive amounts of over-the-counter antibiotics. I lived in constant fear that these infections might pop up at any time. I consumed orange juice and cranberry juice. This did help but not cure. Then one day while walking around and around a hockey rink where my son was playing trying to walk out that "I got to pee feeling", I thought to myself, I wonder if ImmunoFiber can solve this problem. To my total joy and amazement it did. About 1 oz. every other day of NuWorld

Nutrition's Hot Barley Cereal and no problem. I still recommend orange and cranberry juice, but the ImmunoFiber took care of the problem alone. That was in 1995. I haven't had a problem since. I can't hardly believe it. Once in a while when I've been off of ImmunoFiber for awhile I'll feel a slight urinary irritation, but a quick bowl of ImmunoFiber in soup or as cereal – problem solved. Now that I have ImmunoFiber, I go to Mexico and walk by the pharmacies and marvel at how things have changed, I have no temptation to buy over-the-counter antibiotics.

By this time, 1997, I had become a real believer and started my work of trying to understand how ImmunoFiber could have all of these effects which is culminating in this book. At some point I came to realize that allergies and autoimmune diseases should also be affected by consumption of ImmunoFiber. As stated earlier, I have a history of allergies. I am allergic to penicillin and the molds that produce such material. I work as a field scientist in grain crops and I harvest mold-infested grain by hand or a small machine. Often my nose, ears and eyes are black with sooty mold spores. I always get a touch of asthma, hay fever, acute skin rashes, etc. I just accept it. As I learned more about ImmunoFiber I asked myself, "could it flush away these problems too?" To my dumbfounded amazement it did. In order to prevent all of these symptoms I just make sure I take plenty of ImmunoFiber as NuWorld Hot Barley Cereal. At least two ounces per day and I have not had a problem since. Yes, I have to blow my nose full of spores, wash my face, and clean out my ears, all full of spores, but no problem. Again, I now work around this material while others sicken. I just blow my nose and go. This is a very intoxicating feeling to someone who grew up as the sick one, allergic to and catching everything around. I must add that it was during this period that I learned that in order to flush, liquid must be drunk just as doctors have always told us. Second, I learned that decongestants can subvert the flushing process and so must be used with caution. I seldom use them anymore. I just let the flushing go and assume that my clean and activated mucosal surface will sample the bad guys and make the appropriate flushing IgA. It seems to work for me. But you should follow your doctor's instructions. The flushing concept was doctor's orders to me. I had good immuno activity but no flushing, so he said stop decongestants and start taking liquids.

In winter months when our forced air heating comes on (yes just like the dusty house of my youth) it took me weeks of sneezes, coughs and chokes to readjust to the house dust which I am most allergic to. Often it was during these season changing periods that I would get cold/bacterial infections from all the mucous and histamine in the lungs. How things have changed. The heat comes on and I sneeze a bit- up my barley flake consumption, a bowl in the morning and at night, about 2 ounces, and the problem is over in 24 hours. That's all it takes. I might add that the same is true when I go to Mexico and other strange environments. I can feel my nasal passages picking up new irritants and microbes. I take the immuno flakes before bed and some at breakfast and all problems over.

Although not a specific disease symptom the most regular everyday effect of the ImmunoFiber on my life is that light on the feet feeling. When I consume too much fat in particular I can feel the swelling. A small portion of ImmunoFiber as flakes or flour or taken alone either before or after, it doesn't matter, cures this effect. I've noted that with this effect comes improved circulation, lower blood pressure (goes down 20 points). With ImmunoFiber incorporated, pizzas and fried foods do not incapacitate me. I can get up and play football with my sons without that tight bloated feeling.

Finally, people often ask me if there is a Viagra effect with this material. Well, of course there is. One thing about guys is that they have a built in circulation gauge, the external dangling penis. When in the fat bloated stage, the blood circulation to the penis is reduced. It shrinks and gets cold. After a quick shot of ImmunoFiber, this condition is reversed. Often I can even feel the warm flow of blood to that organ. It's a real nice feeling. That organ does not function without good blood circulation. So again, without getting into the intimate details, of course there is a Viagra type effect. Hey, I love this stuff.

Visitors from the Land of Shangri-La

You may recall that in the opening chapters in which I discuss the anthropological basis of barley as the tonic of antiquity, I spoke of the Aryan invaders (barley eaters) that invaded the Indian subcontinent and on into the Himalayan highland of the north bringing the barley (originally from the Mideast) with them (this occurred about 3000 years ago). You may also recall that I spoke of places noted for longevity and mentioned that the Tibetan Highland was one such area. I also noted that among these places, consumption of barley was a common feature. Imagine my surprise when in 1999 we were contacted by a Tibetan business/government group interested in marketing health products based on barley. At that time, Castle Dome Foods had been granted patents on extracted and isolated viscous beta-glucan (ImmunoFiber) products. The Tibetan group was attracted to us because of these products. The group consisted of Mr. Den Ba Tar Gye (a noted Tibetan businessman) and the Tibetan Minister of Health and translator, Sonam Pelmo, and accompanied by Dr. Nancy Harris. I had a most interesting meeting with these people in the spring of 2000 in Anaheim, CA. There are political and commercial aspects of this affair which I would like to put aside for now. I was interested in the anthropological and scientific aspects. To be quite clear, the people were not Chinese. These people were descendents of the original Aryan invaders that brought barley to Tibet, India and western China. The conversation of interest was with the Minister of Health. The diet of the people consist of 90% barley and 10% animal products (fatty animal products) like milk, yogurt, meat. And, in spite of this fact, colon cancer and heart disease is unheard of and the general health and

longevity of the people (though they are poor) is excellent. The Minister of Health attributed this to the barley they eat which is hulless, and some varieties being waxy. In short, they have waxy hulless barley and in turn, probably their own natural version of ImmunoFiber. He felt that the basis of their health was the roasted barley that is their staple food, used in numerous ways, and their high, clean, mountain climate. He felt that they could not export the mountain climate but they could export the barley (food) part of the equation. This was their purpose in coming to the U.S. Again, this was most affirmative of the concepts described in this book. In my conversation with these kind, sincere people, I felt I was looking back in time to the Aryans, Greek, and Romans of 2000 – 3000 years ago. The concept of barley as a tonical food was clear and unmistakable. The fact that over time, hulless and waxy hulless types were found to be the most advantageous for human use was also quite striking.

Others Comments/Observations

- JMG, MD

I eat hot barley cereal every day. In a little less than a year I decreased my cholesterol 96 pts, my triglycerides 104 pts ,raised my HDL from 30 to 51 and lowered my LDL 50 pts. I have made the cereal a habit. Regularity has also improved. I have recommended this product to many friends and relatives. I love the product.

- FXMcD., CA

I eat hot barley cereal twice a week and put bananas and raisins in it. I noticed a considerable drop last year in my cholesterol level. This product has become an

integrate part of my life and food intake . . . and I'm sure of its nutritional benefits.
Thank you, Wally.

- MR, NV

I eat this product every day. I use it as a hot cereal and also for baking cookies and bread. I find the barley cereal to be very smooth and I feel full after eating it, so it has helped me to lose weight.. It has reduced my cholesterol and helped lower my glucose count (it had been high). I recommend your product to my family and friends. I am 71 years young.

- VE, CA

I eat this hot barley cereal every day. I eat it as cereal and use it in baking bread. I feel that it plays a significant part in keeping my cholesterol level down. I have used the barley cereal everyday for the last three years. It is an excellent, very palatable roughage. It is never gummy or sticky as are so many cooked cereals. Personally I feel that it has contributed to my vigorous, energetic health.

- MEG, PA

I eat barley cereal every day and also use it in baking (I love your recipes). I haven't had a cold or flu since eating the barley cereal. My son has IBS and he has no symptoms as long as he eats the barley cereal-he can even eat anything he wants!

- CAMacA, OH

I eat this barley cereal every morning and it has helped regularity. I have discontinued all laxative use. I was practically laxative dependent for 6 months prior to trying the WHB cereal. I am very happy to say I haven't taken a laxative since the day I started eating it.

- LAS, OH

I eat your barley cereal once a day. My cholesterol dropped 110 points in 4 weeks - along with taking Rx medication. My Dr. said that's the most he's ever seen. Since I started eating the cereal it seems like now I can't start my day without it!

- KLM, OH

I eat your barley cereal once a day for breakfast. I use 1 cup soy milk, 1/4 cup barley and 1/4 cup wheat germ per person. It helps regularity and regulates blood sugar between breakfast lunch. It tastes good and I recommend it to loved ones who have health problems such as irritable bowel, immune problems and cholesterol problems.

- EB, NJ

I eat this cereal 2-3 times per week as a hot cereal. I am using it to lower cholesterol because of its high soluble fiber content. I had a heart attack and have eliminated fat from my diet. I eat a very, very low fat diet, exercise 3 times a week for 2 hours. My cholesterol has gone from 230 to 150. I cook barley and apples together. The cereal is much better tasting than oat bran which I was still eating prior to discovering barley. Barley is easier to cook and has an improved flavor. We have converted a number of people to barley and enjoy the cereal! I feel that the barley has played a part in my cholesterol reduction program. I have also mailed your barley to my cousins in Germany who have enjoyed it while they visited here.

- MM, OH

I eat this barley as cereal every day and use it in baking cookies and muffins. My cholesterol was 286-doctor wanted me to take Lipator-I used barley instead and cut out everything containing hydrogenated oils. In 3 months all of my blood reports were in the normal range-including liver and cholesterol was 201 - I am 73 years

young. I recommend barley cereal to everyone! I try to walk more and my only medication is vitamins and plenty of water.

- KCS, AZ

I eat this barley as a hot cereal 5 days a week. Cholesterol-about 20 points lower. Helps with regularity. Keeps stools soft but not runny. Hot waxy barley cereal is about twice as effective as oats for promoting regularity. It both firms up and softens stools.

- JH, NY

We eat this barley 3-4 times a week, mostly as a cereal-also pancakes, muffins and cookies. We enjoy the taste and texture so much more than oat bran and/or oatmeal. My husband eats 1/2 cup of barley every day as a cereal and his cholesterol dropped from 229 to 163 (56 points) in 3 years and I use the barley 4 times a week and my cholesterol dropped from 229 to 210 in 4 months. We're happy with the results. We also eat a high fiber low fat diet for years focusing on fruits vegetables and grains-we have recently been working on increasing activity: using stairs, parking further away, etc.

14. Research Studies

Barley and Cholesterol Response in Humans

Eight clinical trials involving humans consuming β -glucan containing barley products reported an average decrease in cholesterol of 5.4% (Newman et al. 1989a; Newman et al. 1989b; McIntosh et al. 1991; Narain et al. 1992; Ikegami et al. 1996; Pins et al 2000; Behall et al 2004a; Behall 2004b). This is similar to the cholesterol decreases reported when oats, psyllium or soy protein are consumed and upon which the FDA based their rulings to allow health claims for these products. Two studies in which participants

consumed brewers spent grains or barley oil reported a 7.5% decrease in cholesterol (Zhang et al. 1991, Lupton et al. 1994). These findings are consistent with the animal studies, confirming the importance of the whole barley grain.

The National Barley Foods Council has recently submitted a petition to the FDA to use the claim “Barley Lowers Cholesterol” on packages of foods containing barley. The clinical, animal and chemical research presented in the petition strongly supports the conclusion that barley and oat soluble fiber are physically and functionally almost identical. Consuming barley is a simple and effective way to increase fiber in the diet and maintain a healthy heart.

Cholesterol Response in Animals

Barley β -glucans consistently reduce plasma cholesterol in rats, hamsters and chickens (McIntosh et al. 1995, Kahlon and Chow 1997, Fastnaught 2000). Thirty-five out of thirty-nine animal nutritional studies reported that barley β -glucan soluble fiber significantly lowered total and/or LDL cholesterol from 8 to 80%. Barley products tested include meal, flour, bran, sieved flour (β -glucan enriched flour) and extracts. Barley and oats were directly compared in fourteen of these animal studies. In all but two, the barley lowered total and LDL cholesterol greater than or the same as oats.

Follow-up research reported that enzyme treatments that break down β -glucan reduce the beneficial activity of barley in chicks (Wang et al. 1992). Research reporting from 70 to 200% increase in fat excretion in small animals consuming barley β -glucan support the hypothesis that this soluble fiber reduces fat and cholesterol absorption (Hecker et al. 1998, Wang et al. 1992, 1997). However, seven studies reported an average cholesterol decrease of 13, 15 and 30%, respectively, when small animals consumed barley products which did not contain β -glucan, i.e., barley oil or brewer's spent grains. This suggests that barley contains other compounds (oil, antioxidants) that may play a role in cholesterol reduction.

Other Physiological Properties of Barley Components

The viscosity produced by β -glucans may have other significant effects in the human digestive system. Barley has a low glycemic index even when consumed as a boiled flour porridge (Granfeldt et al. 1994, Liljeberg et al. 1996). Yokoyama et al. (1997) reported 63% lower peak blood glucose and 53% lower insulin response in humans following meals of pasta containing 7.7% barley β -glucan. Thus inclusion of barley in the diet may help prevent and control diabetes by reducing the rise in blood glucose and insulin after meals (Wood et al. 1994, Tappy et al. 1996).

Barley and oat β -glucans have some structural similarities to the β -glucans found in bacterial cell walls. The human digestive system has binding sites for bacterial β -glucans. It has been hypothesized that increased viscosity of the contents of the small intestine enhances the health of the digestive system by removing microbes and toxins quickly. In addition, presence of non-bacterial β -glucan may activate the intestinal immune system to produce IgA which also removes microbes and toxins. Yun et al. (1997) reported that immune function was restored in immunosuppressed rats treated with oat β -glucan.

Whole barley like whole oat, wheat and other cereal grains contain significant amounts of tocopherols (tocopherols and tocotrienols), including vitamin E and other lipid soluble antioxidants. They also contain phenolic compounds, such as ferulic acid, a nonsteroidal anti-inflammatory substance. In addition to soluble fiber, barley contains an equal amount of insoluble fiber which has been reported to reduce tumors and tumor mass in rats (McIntosh et al. 1993) and improves colon health by reducing transit time.

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