BETA GLUCAN

a 21st Century MIRACLE?

Dr. Christopher Hertzog

Copyright

Beta Glucan

A 21st Century Miracle?

1st edition 2013

Text by Dr. Christopher Hertzog

eISBN 978-616-222-265-8

Published by www.booksmango.com

***

PREFACE

Beta Glucan is without a doubt one of the most underrated medical finds in the last 100 years.

The surprising fact is that Beta Glucan has been used in Asia for more than ten years, often as a primary treatment for almost all types of cancer. It has also been proven successful in combatting cardiovascular disease, which is now accepted to be by far the greatest killer in developed countries. So how is it that hardly anyone has heard of this phenomenal product?

With information provided in this book, it is hoped that more notice will be taken of Beta Glucan and its role in promoting human health. Credit must start to be given to the most powerful immune enhancer known to man. As human lifespan is increasing year by year, Beta Glucan will be able to improve one's quality of life well into the 21st Century.

www.buybetaglucan.com

Chapter One: Beta Glucan

What is Beta Glucan? What is all the fuss about? How is it that almost no-one has ever heard of it, not even doctors, at least in most developed countries? How is it possible that this polysaccharide product, in simple inexpensive capsule form, could possibly even be rumoured to be on stream to replace most conventional antibiotics by the end of 2016?

These and a host of other questions have arisen since a recent 2013 expose by a Singaporean journalist in the Asian Medical Press. The author disclosed that some of the largest pharmaceutical companies have probably spent literally millions of dollars in suppressing the truth about Beta Glucan coming to light. Why? When we look at just what this product can do, the reason becomes apparent. Many pharmaceutical companies spend millions of dollars on research. Few products ever reach the marketplace. The truth is that when these few products do reach the marketplace, they can make billions of dollars profit for the companies concerned. This of course, is only possible if the company takes out effective world-wide patents. But these patents are usually of comparatively short duration, after which they go 'generic'. Then these products can be manufactured by other companies, who can piggy-back on the original research and production complexities, and produce the same product for a fraction of the original price!

Whilst the sale of generic drugs is financially good for

consumers and patients, one has to have some sympathy for Big Pharma for their lost profit after the patent period has expired. However in the case of Beta Glucan, big pharmaceutical companies are only too aware that as the compound is already in the public domain, they cannot patent it, so it is not worthwhile attempting to make the Beta Glucan product themselves. It must be doubly galling to realise just how cheaply it can be manufactured, and furthermore, just how effective it could prove to be. If more and more people use Beta Glucan for their health, the pharmaceutical firms will suffer a devastating loss in profit across a whole spectrum of healthcare products.

What is amazing, is that this product has been known about for decades. It has so far attracted no less than 12,400 entries on Google, and over 6,400 entries on PubMed alone!

How is it that no-one has heard of it? The answer is, that a few people have heard of it.

Ironically, the first use of Beta Glucan was in the cosmetics industry. It was added to face creams and the like, but little use was made of it as a health supplement. In some countries, such as Thailand, the product has been marketed low key as a valuable member of the non-prescription regime there, but on a Multi-Level Marketing (MLM) basis. That is surely not the best way for Beta Glucan to be marketed. A Thai physician wrote a book on the subject, clearly aimed at aiding MLM salespeople on the ground, but little else!

In Europe, the U.S. and Canada, little is known about

Beta Glucan. Few people have heard it mentioned, let alone being encouraged to take it on a daily basis. Mention it to your average doctor or G.P, and he will ask you 'Beta what?!!' One can hope that all this is about to change. Hopefully the change will come not just from the publication of this book, but also from a genuine desire of the public to learn more about Beta Glucan, which is present in small quantities in every living cell of ours. Without this polysaccharide, life would not be possible anyway.

However, despite being almost unheard of, oat Beta Glucan has been approved of by the FDA in the U.S. in 1997, for heart health claims, more importantly reaffirmed in a ruling in 2003. Oat Beta Glucan is one of only four food ingredients to be approved for heart health and lowering of blood cholesterol, with accompanying reduced risk of coronary artery disease, by E.F.S.A. - the European Food Safety Authority, affirmed in 2010.

Chapter Two: What Exactly Is Beta Glucan?

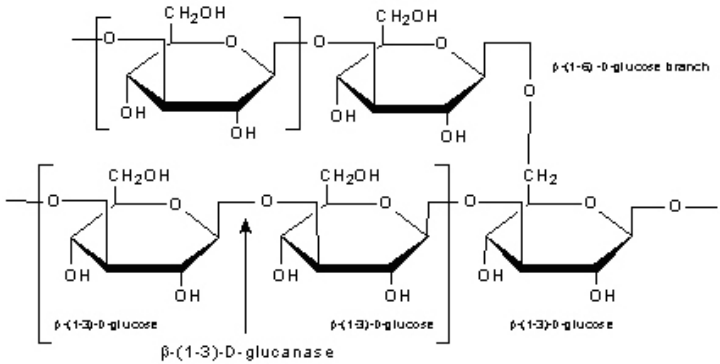
'Beta Glucan is the world most powerful immune booster known to man.'

'In a medical crisis, if you were limited to only one disease-fighting substance to protect your health and immunity, without exception, Beta Glucan should be the one you choose.'

Professor Somsak Varakamin, M.D., Dr. PH. Tulane University, USA, Secretary General, Ministry of Public Health, Thailand

Beta Glucan is a complex but relatively straightforward polysaccharide found in every existing living organism**.** Polysaccharides are a class of complex sugars with a high molecular weight. Beta Glucan can also be described as a long chain carbohydrate or soluble fibre, which emanates from cell walls in various plants. It is usually indigestible by humans in its raw state. Some of the supplemental forms produced today are derived from wheat or barley in which case they exhibit the beta 1.3 and 1.4 linkages. However the preferred form is from Brewer's yeast, certain fungi and mushrooms, where the linkages are the preferred beta 1.3 and 1.6 forms.

Chemical structure of yeast Beta Glucan



Beta Glucan is a very important supplement for us all to take, as it is the strongest immune enhancer known to man. This inexpensive and simple-to-take polysaccharide, in capsule or tablet form, can correct an immune system deficiency or imbalance. It can combat such a host of other conditions, that almost

defies credibility and could even detract from its true worth and value in the medical field. The vast range of health benefits exhibited by this compound is by itself almost a disadvantage. Few professionals are prepared to believe or even listen to the potential benefits of Beta Glucan, and just how much it could affect and improve our lives, because it sounds too good to be true. Beta Glucan researchers say that by suppressing the truth and true value of information about the nature of this product, many thousands or even millions of people, could have lived somewhat longer or at least had a better quality of life for a greater number of years! The dilemma for Big Pharma is the age-old conundrum. They owe a duty to their shareholders. If they cannot patent a product and gain exclusivity for at least 15 years, then it is not worth doing. Altruism does not enter into the equation! It is simply not cost effective for the large pharmaceutical companies to produce it regardless of however many customers it might help. Cynics would even go as far as saying that pharmaceutical companies' role of preference, is to treat, not cure. There is no further income to be gained from curing something! Big pharmaceutical firms are not villains here. They serve a valuable and a vital service, but even they have their limitations.

Then there is a trouble with the MLM approach. At the end of the day, a mass of keen salesmen are recruited. Their sole aim is usually to put a meal on the table at the end of the day. These sales persons are not medically trained. If they are asked a question which they do not know the answer to, the temptation is to reply with

what they think the customer wants to hear. This may not always be correct or even helpful; at worst it could be life threatening!

For some unknown reason, Beta Glucan has been sidelined for decades, despite the mass of published material. No-one, it seems, has had the money or political clout, to ensure that this product gets the recognition it deserves. True, it will cut across the vast profits currently afforded to many branded drugs. But in the final analysis the cover up cannot be allowed to continue, when one has to choose between the profits accruing to the major pharmaceutical firms, or the welfare of millions of customers and patients worldwide, as well as serious reductions in the healthcare budgets of Governments the world over.

At worst, things will continue as at present, with a wealth of material applauding the ability of Beta Glucan as a polysaccharide to change things for the better in the world, just going on and continuing to be unrecognised. At best, Beta Glucan will receive the status it deserves. Various governments will begin to recognise that they have a tool within their grasp, that could improve the health of their population for better in a very short time.

Chapter Three: Beta Glucan Bioactivity

The first thing to realise, is that Beta Glucan has been around for a long time. Just four decades ago, the only laboratory produced BG was so expensive to isolate, no-one chose or could afford to experiment or even work with the substance!

However, the first study began way back in the 1940's, when the drug Zymosan was studied in detail by Dr. Nicholas di Luzio at Tulane University in New Orleans. He attempted to discover why the drug exhibited so many side-effects as an immune stimulator. He found that the active ingredient of Zymosan was Beta 1.3 Glucan, a complex long chain polysaccharide. This ingredient itself, when isolated, could produce the same results in promoting enhanced immunity in the body, without any of the attendant side-effects. It was later discovered that the Beta 1.3 Glucan isolated from Zymosan is Beta 1.3,1.6 Glucan.

In the early days it was understood that all Beta 1.3 Glucan products worked identically, regardless of their origin. Now it is known that those derived from oats, barley or wheat with 1.3, 1.4 on the chain, are best equipped to deal with cardiovascular disease (CVD) and related problems, such as elevated cholesterol levels. However they are minimally effective in immune potentiation. Beta 1.3, 1.6 Glucan is derived from Brewer's Yeast as well as certain fungi and selected mushrooms. Beta Glucan in this form is the one with immune booster or immune modulator ability. As a result Beta 1.3, 1.6

Glucan is used in the treatment of cancer, HIV/AIDS, osteo-arthritis, the common cold, influenza, H_1N_1 swine flu, allergies including asthma and lupus, and a whole battery of other ailments. Brewer's Yeast has become the source of choice for Beta 1.3, 1.6 Glucan, due to its ease to isolate, its availability and cost effectiveness. In this book Beta Glucan will refer to those with the 1.3, 1.6 linkage regardless of its source. Different health supplement companies have made various claims for their own source and what it can do, but if these differ from the main thesis promulgated above, then they should be regarded with a degree of scepticism, and attributed to their greater individual need to boost their own profits.

As the availability of Beta 1.3, 1.6 Glucan became more widespread, only a handful of companies included it in their range of tablets or capsules as a health supplement. It was the cosmetics industry that first realized its potential, and included it in facial creams, body creams and lotions. It seems that this was to be comparatively short-lived, and gave way soon after to new additions, such as Carnitine, Arginine and Hyaluronic acid amongst others, in a bid to out manoeuvre their rivals in the industry. Only a select few companies in the world now produce a proper Beta Glucan cream with medical efficacy, which of necessity must include a minimum 1% of BG or more.

Several companies are now beginning to promote Beta Glucan as a healthy supplement to be taken in capsule form. But as research continues, more and more uses are being found for this product, ranging from

treating radiation sickness to skin cancer and acting as an effective sun screen filter. Since early on in its developmental stage, it was realized that Beta Glucan could combat cancer. However it is only since 2006 that high doses have started to be given with satisfactory results, safe in the knowledge that at least they would not incur any adverse reaction in patients.

Chapter Four: Potential Benefits Of Beta Glucan

Ever since history began, man has embarked on a quest to maintain and improve health. It can be done by looking after himself more carefully, by diet, exercise or a host of other regimes. These activities are designed to increase people's longevity or their quality of life. Many elixirs of life have been touted through the ages, but few have had any real value or true effect.

Why should Beta Glucan be any different? How could a relatively straightforward polysaccharide derived from Brewer's Yeast, effect so many benefits not only for the human body, but for other animals as well? What can it do? How can it help the human body?

Firstly, Beta Glucan is an effective anti-oxidant. It counteracts the ravages caused by negatively charged molecules of oxygen travelling around the body. Free radicals cause damage and premature aging. Beta Glucan serves to combat free radicals which are effectively on the rampage!

Secondly, Beta Glucan can be used in the battle against cancer, which as most people know, is the second greatest killer in the developed world after CVD or cardiovascular disease. As an immune modulator, BG enhances the action of our white blood cells (WBC's) in the body. WBC's exist to fight infection. They comprise macrophages, neutrophils, NK or Natural Killer cells, T cells and others. Their duties are to fight and devour invading unnatural cells, such as those typically found in cancer.

Beta Glucan also enhances the production of interferon, Interleukin-1 and 2, and various cytokines which form a vital part of immune regulation via the WBC's in the body, particularly in cancer cases.

As Beta Glucan can greatly enhance our immune system, it can also help conventional cancer treatment such as that offered by chemotherapy, radiotherapy and tamoxifen at the same time. Actual dosages needed will be discussed in a later chapter. Right now, we just need to know that every type of cancer can be helped by taking Beta Glucan. However it is advisable to take BG prophylactically or preventatively in the first place, thus alleviating some of the causes of cancer in the first place. Should one therefore be taking Beta Glucan all one's life? The answer is a big 'Yes'.

As the human body's immune system is of paramount importance, any enhancement can only produce beneficial effects, in improving a deficient immune system. Malnutrition, a diet with a high percentage of refined foods or containing many preservatives or E-numbers, can be the cause of a deficient immune system. Beta Glucan has also been reported to be useful in the fight against HIV/AIDS.

The consumption of Beta Glucan has additionally been linked to lowering cholesterol levels, reducing the LDL level (bad cholesterol), and raising HDL serum levels (good cholesterol). The overall triglyceride level has been shown to improve dramatically. Not unconnected of course, improvements have been demonstrated in cases of Type II diabetes, lowering glucose and insulin levels.

Beta Glucan is the first product in the world which is able to combat both viral and bacterial infections, such as the common cold, influenza, H_1N_1 swine flu, and many related conditions. It can help greatly with auto-immune deficiencies, as found in asthma, M.S., osteo-arthritis (O.A), lupus and many allergies. Although the best source is derived from Brewer's Yeast, it is not contraindicated for persons suffering from candidiasis, as it is prepared as an extract from the cell wall, rather than the whole yeast extract, thus can safely be considered to be hypoallergenic.

Other studies have shown that BG can be effective in cases of exposure to high levels of radioactivity, as used with cases encountered in the Chernobyl disaster in Ukraine, as well as offering some protection in cases of anthrax, dengue fever and smallpox, all of which have been used at various times as chemical warfare agents. Beta Glucan has been used to combat malaria, where again an elevated immunity can only be beneficial, as is the case with fibromyalgia. Rumour has it that Beta Glucan may begin to replace some conventional antibiotics by the end of 2016. This replacement would damage the vast profits of the principal companies currently involved in antibiotic manufacture. Antibiotics work remedially once an infection has taken hold, but Beta Glucan works from a totally different standpoint. BG offers enhanced immunity, so that the infection can be resisted in the first place. As a result the use of BG can dramatically reduce overall healthcare expense as well as aiding the task of healthcare professionals involved.

Beta Glucan was initially very expensive to produce. The production involved a complicated extraction process, especially when sourced from mushrooms, wheat, oats and barley. That was only twenty years ago. But since then techniques have improved dramatically. These days the extraction is far less costly, yet more effective. Even less excuse then, for this substance to be ignored or left unsung when the benefits are so great, despite any incursions into the vast profits made by the pharmaceutical giants. The time is fast approaching, when these considerations will have to be put to one side, and the benefits provided by Beta Glucan can be reaped by all.

Chapter Five: How Exactly Does Beta Glucan Work?

In order to resist infections of many different kinds, the body must employ an efficient immune system. In many cases, the body need only call on its own built-in ability to cope. In many others, the body needs to call up additional support. This can and should be Beta Glucan.

Many factors cause the human immune system's ability to cope and thus defend us to deteriorate. Age, illness, stress levels, smoking, taking certain drugs, exposure to radiation, toxic chemicals, environmental factors including pesticides, exhaust emissions, increasing pollutant levels and incidence of heavy metals are major factors among the list.

Different pathogens attack our body and demand a response from a variety of cells to help fight our battles for us. Macrophages or phagocytes, and many types of lymphocytes, including T, Natural Killer cells (NK cells) and B cells are the tireless workers of the human immune system. Beta Glucan works by binding on to receptor sites exhibited by phagocytes - a general term often including macrophages, monocytes (blood), granulocytes, NK cells, dendritic cells and Langerhan cells (skin). These receptor sites, called dectin-1, allow Beta 1.3, 1.6 Glucan, to bind with them and form an increasingly effective defence system. Once phagocytes are activated in this way, they undergo various changes which in turn release certain hormones. Examples

are cytokines, such as Interleukin-1 (IL-1), which are employed to fight various types of cancer and tumours.

Any assistance to the WBC's to attack and devour infection can only be welcomed by the body, whether it be assisting macrophages, monocytes or neutrophils. A heightened immune response allows B cells to convert into larger plasma cells, which in turn release antibodies which allow the phagocytes to attack and overcome any infection. T cells identify infection and speed up a response by our human defence system.

If we are very fit or manage somehow to maintain an alkaline body (pH over 7.2), cancer can be resisted in almost all cases. However, a weakened immune system not only exposes the body to cancer, but also allows a secondary infection or metastases to take hold in other parts of the body, away from the primary troubled site.

All kinds of activities or lack of them, can contribute to a reduced immunity in our bodies. A poor diet, lack of exercise, toxins generally or free radicals, all adversely affect our immune system. In the case of free radicals, negatively charged oxygen molecules are constantly rushing round our body every millisecond, and causing every part of our body to suffer or 'rust' as it has sometimes been described. This toxic effect, combined with high levels of sugar, can attach to a cancer cell, which can have almost 25 times more sugar receptors compared to a normal cell. Thus Beta Glucan is a welcome addition to the armoury in the fight against cancer, aiding overworked macrophages and NK cells, whose specific job is to identify and kill tumoral cancer

cells, hence the name Natural Killer cells. Beta Glucan can bind to receptors on both macrophages and NK cells, encouraging them to attack the cancer cells, yet allow the healthy surrounding tissue to be left alone.

The fact that our human defence system has identified a tumour or any cancerous cells does not mean that it is strong enough to destroy them. Beta Glucan enhances the immune response in the human body, stimulating the production of more immunocytes in the bone marrow, and then releasing them into the bloodstream to reach various organs around the body.

Treating cancer with chemotherapy automatically lowers immunity in the body by reducing the numbers and activity of the WBC's available. As a result this renders the body more susceptible to other infection. Beta Glucan counters this loss. When Beta Glucan enters the blood stream, it activates the release of various factors which help in the fight against cancer and other infections. These include Interleukins 1 and 6 (IL-1 and IL-6), tumour necrosis factor (TNF), hydrogen peroxide (H_20_2), and Interferon. Beta Glucan can be used very effectively in cancer treatment in combination with chemotherapy, thereby reducing one of the single most dangerous side-effects produced by that method of treatment. The same applies to radiotherapy, where Beta Glucan will successfully combat most of any adverse side-effects encountered when undergoing that type of treatment as well.

Chapter Six: Other Uses Of Beta Glucan

During a general infection in the body, neutrophils are the most abundant immune cells present which are able to combat a bacterial attack. Neutrophils are called to the site of the infection in the first place by certain proteins in the blood, called chemo-attractants.

It has been found that Beta Glucan is able to bind on to the neutrophils' CR3 receptors and thus enhance their destructive ability.

This discovery has led to a plethora of further uses for BG in reducing post-operative infection, by the very fact that it is able to increase the efficacy of the human immune system. Double-blind trials have proven Beta Glucan's success in cardiovascular, gastro-intestinal, abdominal and thoracic surgery, with an increased resistance to infection by up to 40%, against an untreated proportion of patients who were administered placebo.

It is obvious that certain conditions cannot be deliberately induced in humans in order to prove the efficacy of any substance, including Beta Glucan. Mice are invariably used for such research. In most cases, the results exhibit the same response as would be expected in the human body. The dangerous disease of anthrax, for instance, is one such condition. Mice treated with antibiotics alone after a ten day period failed to survive, yet those treated with a combination of antibiotics and Beta Glucan survived up to a rate of 90% .

Another major factor affecting vast numbers of people, especially in the Western world is the increasing incidence

of high blood cholesterol levels. Although a certain amount of cholesterol is vital to the normal functioning of the body, raised levels give rise to heart disease and other complications. Fatty deposits of cholesterol in the arteries can eventually cause atheromatous plaques. These plaques or the ruptured plaques can restrict blood flow from the heart to other major organs in the body, such as the brain or the heart (which could lead to a stroke or heart-attack respectively). Then there are the kidneys and various other organs. The usual response is for doctors to put patients on a prolonged course of Statins. The consumption of these drugs has an initial beneficial effect, but after a period of time their effectiveness can be reduced as well as certain adverse side-effects starting to show. Beta Glucan 1.3, 1.4 derived from oats, barley or wheat, is particularly effective in reducing cholesterol levels of LDL (so-called bad cholesterol) and raising HDL (so called good cholesterol) levels where required.

Excess cholesterol in the blood stream can suppress normal bile production.

Beta Glucan reduces cholesterol absorption in the intestine by binding to excess cholesterol and cholesterol-like substances in the gut, and helps to prevent these from being absorbed into the body. This complex is then excreted as part of normal body waste. By binding to bile and cholesterol, Beta Glucan prevents them from being reabsorbed lower down the digestive tract. Because less cholesterol is being absorbed by the digestive system, the body has to remove more cholesterol out of the blood stream and

process it into bile to help with the digestive process. This in turn, helps to reduce the level of cholesterol in the human body.

Another more recent use for Beta Glucan has been in response to radiation damage from radioactive sources. It was used effectively in the much publicised disasters at Chernobyl in the Ukraine in April 1986, and much more recently in the Fukushima disaster in Japan on March 11th, 2011. Less than 30% of the radiation exposure occurred in the Fukushima nuclear plant meltdown compared to the Chernobyl incident. However, more people in Japan received radiation related sickness, because a 13 metre Tsunami wave tore over the 10 metre protective wall surrounding the plant, which resulted in radiation being released by the excess flood water. Although no acute radiation syndrome fatalities were recorded at the time, future cancer risks from exposure in the outlying districts will increase considerably as time goes by. Beta Glucan is currently in use to treat those in the population affected by that radiation.

Those are by far the most dramatic examples. However the human body is increasingly subjected to the effect of the unusual eruption of solar flares, depleted ozone levels in the atmosphere, and numerous other factors leading to a depletion in immune levels generally. In all instances, the correct dose of Beta Glucan should be able to assist the normal immune function of the body. BG can reduce the increased free radical attack which invariably occurs, which in turn lessens cellular damage and allows cellular repair and growth to proceed normally.

Chapter Seven: Beta Glucan Cream

Ironically, Beta Glucan made its first appearance on the world stage decades ago as an additional ingredient in many types of cream produced by the leading cosmetics manufacturers. They believed that Beta Glucan's healing and wrinkle, cellulite and other age-reducing attributes would not only enhance the effectiveness of their manufactured products, but more importantly, would help to increase product sales.

In addition, Beta Glucan and other polysaccharides have been used in general protective creams, ointments, powders and suspensions for several decades. This happened after the price was brought down, and its manufacture simplified. Its attributed activity is that it increases collagen production, and reduces age-lines, crows feet, wrinkles, cellulite, acne, dermatitis, eczema, psoriasis and other skin conditions. Beta Glucan creams promote their beneficial effects by attaching active molecules to the Langerhan cells in the skin to become the active units in the cellular anti free radical process. Beta Glucan can also help with post-operative skin conditions, scarring, dry skin, inflammation, boils, and herpes simplex. In the case of cosmetic surgery, Beta Glucan skin products would be a far safer alternative to the already widely used Botox, collagen and Restylane treatments, about which some of the long-term effects have not yet been able to be assessed.

The original amounts of Beta Glucan included in the early versions of cream were often negligible. Now it

is found that in order to be effective, any Beta Glucan Cream must contain an absolute minimum of 1% BG content. Any products with Beta Glucan containing less than 1 % will not work properly nor satisfy any of the claims that could be made for a cream with Beta Glucan as an ingredient. No adverse side-effects have been encountered, and the cream, if properly prepared, will increase elasticity in the skin as well as hydration. Teenagers, who are prone to acne, have found Beta Glucan cream most effective after a comparatively short time of using it. Then the youngsters go on to use Beta Glucan cream for any minor wounds or cuts that they might sustain in everyday life.

The skin, of course, is by far the largest organ in the body, and it is vital to have good active immune support. Our top layer of skin is called the epidermis. It contains a large number of macrophages, which can be enhanced and activated in just the same way by a topical Beta Glucan cream, as they would be internally in the body by taking a tablet or capsule.

Most pharmaceutical and cosmetics companies that employed Beta Glucan in their creams before the turn of the century, employed far less than the minimum amount required to contribute to being an effective preparation. They did not achieve as good as results as could have been expected by using the correct minimum content of Beta Glucan. Several companies were extremely keen to use BG properly, but as always were worried about the difficulty of trying to patent something that was clearly becoming well known in the public domain. Ciba Geigy later took out a patent for a

Beta Glucan cream, but did not make use of it for some considerable time. Another company in France paid for a patent to control skin aging and increasing elasticity in the skin, but their Beta Glucan content was too low.

Shaklee, an MLM company in the U.S, took out a patent on a Beta Glucan cream for use in their company, selling products on a multi level marketing basis. They claimed that their cream improved the viability of cells in the epidermis, and decreased the effects of inflammation as well as helping to protect the skin from UV radiation. A leading Australian company took out a product patent containing Beta Glucan for UV, photoaging and pre-malignant and fully malignant skin cancer protection .

A Swiss company patented a Beta Glucan cream. The claim was that their product promoted the growth of human keratinocytes (skin growth cells), and generally enhanced the skin's immune system. In their double-blind trials that followed, the company was able to demonstrate that their subjects showed an increased activation of the body's natural defence systems, as well as an acceleration in the skin's healing processes in the case of wounds or infection. Their source for Beta Glucan was originally from mushrooms, but they later preferred to adopt an extract from Brewer's yeast cell walls.

Colgate, located in the U.S., applied for a patent for an oral lubricating Beta Glucan product. It was designed to treat xerostomia, or dry-mouth syndrome, which aimed at rectifying conditions where saliva could not be adequately produced. The condition results in

a burning sensation in the mouth, whereby the throat and mouth could undergo fundamental changes with accompanying dental decay and damage to the tongue, all potentially helped by treating with Beta Glucan.

Chapter Eight: Clinical Success And The Future For Beta Glucan

The future ought to be brilliant for an innovative product such as this! Even though Beta Glucan is described as a straightforward polysaccharide, it is nevertheless a high molecular weight complex sugar, and can be described as a non digestible long chain carbohydrate.

Beta 1.3, 1.6 Glucan is considered by researchers to be the most powerful of the various polysaccharides discovered to contribute varying levels of immune enhancement over the last few decades. Its efficacy shows not only in many animal tests in the laboratory but in humans as well. The primary objective of this book is to convey this message .

Beta Glucan generally is found to consist of repeated glucose subunits joined together by a beta linkage between different carbons within the glucose ring. In nature they are usually found together bound in a sugar-protein complex. The problem with Beta Glucan, being such a powerful immune enhancer, is that it exhibits so many and such a wide range of benefits, that as a result, it is easy for a sceptic to decry the compound as being beyond the bounds of credibility!

So what can researchers do, when confronted with the facts and results of innumerable trials, many of which were conducted double-blind as required for academic protocols on the other hand, then met with sceptical hostility on the other hand. This is coupled with an attempt by some members of what is aptly described by

some as Big Pharma, to suppress any knowledge of this product and its viability and potential effectiveness. Since Beta Glucan has been in the public domain for several decades, it cannot now easily be produced in a patentable form. The best course of action for these interest groups may well be to try to ensure that the merits of Beta Glucan are played down, so that their own products can continue to flourish without interruption. This is not intended as a criticism, as it is all too easy to understand their predicament, as they are there to maximise profits and give the best possible return to their shareholders, without whom they would not be able to exist or carry on in business.

Where they are publicly quoted companies, any disclosures that their products could be undermined in any way by a cheaper, more effective alternative which does not display any adverse side effects, must be a difficult 'pill to swallow'. Eli Lilley, the head of the famous pharmaceutical company bearing his name, once famously said, that no product could be classified as a drug, unless it exhibited at least some side -effects! So, consider the present scene and their predicament!

A Medical journalist in Singapore earlier in 2013, unearthed some unpalatable truths about a scandal and cover-up concerning Beta Glucan and published it. To those in the know, this is nothing new, so little was done about it, except a knowing nod of the head. To those who are hearing the news for the first time, there may well be some short-lived outrage, but how far does the news actually spread? Most in the West have still never heard of the product, and those who have, wonder what

they can do about it when they do not have the financial or political clout to bring it to the fore or do very much else! So this product lingers on somewhat in limbo, until a Government or collection of countries decide to take action, and BG is taken on seriously and even distributed on a large scale to differing sections of the community, which it turn could save billions of pounds, euros or dollars off their respective healthcare budgets!

How, you might ask? Well for a start, taking the U.K. as a prime example, commentators looking at the parlous state of the National Health Service (NHS), as it stands at the moment, constantly quote the fact that elderly patients absorb up to 80% of the funds available, yet comprise only 20% of the patient spectrum. This need not be the case. Maybe a few eminently truthful politicians, if there are any left, would admit that on non-ethical grounds, the best thing for the country would be if people died off at or around the first day that they are eligible to draw their pension! That then implies that perhaps they not only fail to believe in Anti-aging Medicine (AAM) per se, but perhaps that they should be the only section of the community who should be allowed to grow old, thus enjoying their gold-plated pensions for longer?!!

How much more research and proof does there need to be concerning this product? The answer must vary from between none, to only a little. The data is all out there. The double-blind trials have been carried out and written up. It is not a drug as such, so does not require a Product Licence, which would mandatorily narrow down its use, as it could only be licensed for

one particular condition at a time. Here is a product which works as a powerful Immune enhancer right across the board, treating a plethora of conditions ranging from HIV/AIDS, to all types of cancer and leukaemia, cardiovascular disease (CVD), including lipid management, lowering the bad LDL cholesterol, yet raising the HDL or good cholesterol, helping in cases of osteo-arthritis, fibromyalgia, and is an effective antioxidant and free radical scavenger, as well as being one of the first products in the world to combat both bacterial and viral infections, including for the first time the common cold, influenza and even the deadly H_1N_1 swine 'flu. How is this possible? What about antibiotics?

Here we have to pause and take a step back, and consider just what Beta Glucan is attempting to do, and its modus operandi!

Antibiotics, good as they are, act to combat infection once it has taken hold. Patients go to their doctor when they are already suffering. Instead, taking a powerful Immune enhancer such as BG, works in exactly the opposite way! Increased immunity in the body means that someone will have far less chance of contracting the infection in the first place, which would be especially useful in the workplace, ensuring that far fewer days are taken off sick. The same applies while travelling on an aircraft, where 97% of airlines recirculate the air in the cabin, germs and all, even being warmed up at various times on the flight when cabin staff realise that many people would like to gain some sleep before arriving at their destination, particularly on long haul journeys!

Surely if this is the case, why are not health officials jumping for joy at the news, and wanting to adopt BG as a valuable tool in their fight not only against infection and disease, but also to reduce healthcare budgets and promote better health throughout the nation at the same time? Good question! The answer cannot be simple, obviously, or they would do it! There are vested interests abounding, patents which still have years to run, then there is the question of credibility. Question something hard and long enough, and seeds of doubt will be efficiently placed in many minds, effectively by-passing or even ignoring the mass of evidence and trials conducted all over the world!

What can be done? What remaining evidence can be produced to change the situation?

Case 1. An 64 years old Australian patient living in Asia has a rare form of leukaemia. She cannot undergo chemo or radiotherapy, and has been put on Beta Glucan 1,000 mg per day by her Hospital doctors when referred to her oncologists back in Australia. Results are promising as T cell counts went down rapidly in a short amount of time after taking Beta Glucan. But questions now arise as to whether even higher doses can be administered? After all, there are no known adverse side-effects, so higher doses can and will be employed as deemed necessary.

CASE 2. A 84 years old medical doctor in the U.K, suffers from a variety of conditions, including a recently diagnosed cancer in the breast. Tamoxifen was prescribed by her Hospital, but caused a serious

reaction and side-effects, so she had to be taken off the drug. 1000 mg BG is now being administered daily, supplemented by probiotic drink. A reduction in the size of the tumour was observed with no adverse side-effects.

CASE 3. A 57 years old doctor in Sussex, U.K, diagnosed with lower bowel cancer, was given 3 months to live in 2010. He has been extremely pro-active in his own treatment and has been open to all kinds of different approaches, including a high dose Beta Glucan supplement. The patient is still writing a daily blog in 2103 outlining his progress, not only for his own edification, but extolling his way of tackling cancer for others to benefit as well.

CASE 4. A 63 years old patient with temporal arteritis (T.A.) can only be treated with steroids, and later on balanced with a smaller dose of Methotextrate. As any sufferers will know, having to take a comparatively high dose of steroids will necessarily deplete immunity in the body very seriously, resulting in undue exposure to all kinds of infection. The immediate answer to this problem, is to administer a high impact dose of Beta Glucan initially. Then according to the severity of the condition, whether involving T.A. or Giant Cell Arteritis or even Polymyalgia rheumatica, the dose can gradually be tailed off to 500 mg of BG daily, leading to an eventual 200 mg daily dose. The 200 mg dose is the level recommended prophylactically in normal everyday life in most literature, for everyone to take on a daily basis, to help ward off unwanted illness or infection.

Beta Glucan is not a miracle substance to be taken in isolation to the exception of all other treatment, but it could enhance the quality of life for many millions of people right across the world, if we can only get over the inexorable hurdle of credibility and acceptance in the right quarters, and persuade those who take decisions in such matters, that this product is not a threat to society in the future, but a promising substance that can only do good. Sometimes profits should not be the only motivating factor, nor should self-interest or blind disregard for something which one day, will be given the rightful recognition it deserves!

CASE 5. A 66 year old housewife living with a same age husband in S.E England, are prone to constant infections, colds and influenza. The wife decided to take Beta Glucan prophylactically, but the husband would not participate. The incidence of colds and infection remains the same, but now only the husband suffers.

CASE 6. A 48 year old patient contracted a sore throat and took 1000 mg of Beta Glucan immediately. Within 3 days, the sore throat had disappeared, but a visit to the dentist and accompanying X-rays, subsequently revealed that there was an underlying periodontal infection. The patient was not on painkillers prior to the appointment, and the dentist was amazed that anyone could have survived without, suggesting that such pain would normally have been excruciating. Extraction was performed and antibiotic administered. The patient continued to take BG, and the dentist stated that sepsis was avoided because of taking Beta Glucan.

Chapter Nine: Questions And Answers

Q. Is Beta Glucan safe?

A. Beta Glucan has been the subject of an enormous number of trials, double-blind and otherwise, and no adverse side-effects have been encountered.

Q. Which is better? Injections or tablets / capsules?

A. Where an elevated immune system is deemed vital, such as in an emergency, Beta Glucan can be administered by injection. However the standard delivery is in tablet or capsule form, especially as it is rated as a nutritional supplement.

Q. Can Beta Glucan interfere with other medication?

A. Quite the contrary! Beta Glucan in many instances can complement and enhance the action of other medication or drugs. This is amply displayed when it is given in conjunction with conventional antibiotics, chemotherapy, radiotherapy or even Statins and many other drugs.

Q. Can Beta Glucan cure AIDS / HIV?

A. The raised immune levels provided by Beta Glucan is able to combat this immune-deficiency syndrome, and double-blind trials have been able to demonstrate its efficacy.

Q. Can Beta Glucan cure cancer?

A. One of the main applications of Beta Glucan is in relation to cancer. Taken prophylactically BG can help reducing the incidence of cancer. But once cancer has been contracted, Beta Glucan can augment the white

blood cells in their fight against an unnatural invader by promoting various defence cells in the blood, which will be triggered off by an invading pathogen.

Q. Can one overdose on Beta Glucan?

A. In cancer cases, higher and higher doses are being given and in parts of Asia, Beta Glucan is now treated as the first line of defence against many types of cancer. No adverse side-effects have been observed from increasingly larger doses and it can be considered one of the safest treatments to administer.

Q. At what age is it safe to start taking Beta Glucan?

A. It is quite safe at any age, but as aging proper is said to begin at 29, one should at least be choosing to supplement immune levels with Beta Glucan by then. At 29 there is a marked increase in free radical activity, which can be effectively countered by Beta Glucan acting alone, or in combination with other antioxidants.

Q. Could reports of Beta Glucan success, really be placebo effect?

A. The ultimate test for whether the placebo effect is playing a major part in the results attributed to Beta Glucan, is to apply it to infections occurring in animals, particularly mammals. As Beta Glucan has been shown to be equally effective in treatment of animals, the placebo effect has to be discounted.

Q. Is Beta Glucan a drug or a vitamin?

A. Neither! A drug normally exhibits at least some adverse side-effects. In addition, the main pharmaceutical companies do not want to produce it,

as it has been too long in the public domain, and thus cannot generally be patented. Just one more reason why it should be treated as a nutritional supplement!

Q. What is the shelf life of Beta Glucan?

A. Modern E.U. legislation dictates a maximum of 5 years, regardless of whether the real life could be longer or not! In practice, most reputable companies choose a maximum of 4 years or less, just to be on the side of safety, as well as satisfying both customers and the Regulators!

Q. What happens if you suddenly stop taking Beta Glucan after a while?

A. The enhanced immune level one has acquired in the body will last for some while, but will gradually tail off, leaving one with a normal and somewhat lower resistance to infection and other conditions.

Q. Why is Beta Glucan sold at different prices?

A. As with most products in an open market place, it is always possible to find a variation in prices, profit margins and overall quality of the product. Beta Glucan is no different. The better known it becomes, the more competition there will be to sell it. Fake versions will inevitably arise as it becomes more widely available, so it is always prudent to ask for some product literature, test results, and even ask to talk to some existing customers.

Q. Where can I buy Beta Glucan?

A. As the product is becoming better known, it is beginning to be sold in some health food shops. The

Internet has a host of suppliers who can mostly provide the product at reasonable prices. However, the practice of 'caveat emptor' should be applied, and one should always check both on the quality of the product and reliability of the supplier. Most reputable suppliers selling through eBay, for instance, with a high star rating and 100% satisfaction level, would be extremely loathe to lose that reputation, and expressly offer full refunds or request that any query is directed straight at them themselves, rather than a formal complaint be instituted.

Q. How does Beta Glucan combat aging?

A. As an Immune enhancer, any increased immunity can only serve to help not only longevity, but quality of life as well. Conditions which Beta Glucan is employed to treat, would often be ones which could have an effect on one's lifespan, and left untreated, could even result in death. Conditions such as dementia or specifically Alzheimer's Disease, cancer, HIV/AIDS, cardiovascular disease (CVD) are all capable of shortening one's life, but can be positively treated with the correct dosage of Beta Glucan.

Q. What constitutes aging and how can Beta Glucan prolong one's chances of survival?

A. Aging is now claimed to begin in earnest at the age of 29. That is when for instance, insulin clearance after intake of food or drink, begins to go beyond the original 30 minutes or so as a teenager. As long as insulin is being produced, HGH or Human Growth Hormone, cannot be produced. A spike of HGH, regardless of whether it

is induced or is produced naturally, is one of the factors which determines the rate at which one ages. Insulin and HGH cannot co-exist so long overruns occur as one ages, serving to reduce the chance of HGH kicking in at the right time, hence one will age at the normal rate. In addition, free radical activity begins to increase markedly at the same age of 29. These maverick and destructive unpaired oxygen molecules start causing havoc in the body, not only to the cells concerned, but to those they are attached to and even surrounding cells. This can be counteracted by Beta Glucan alone or it can be combined with other antioxidants such as Selenium, in the form of Selenomethionine. Selenium is often combined with Vitamins A, C and E. As time goes by, more and more powerful antioxidants are being found or produced, which may prove to be far more effective.

There are around 100 trillion cells in the human body, and they die off and get replaced around an average of 13 times in a normal human lifespan. The DNA in our chromosomes in every living cell, has an end cap at either end, called a telomere. The length of these small threads plays a major part in determining how long one lives! Research has shown that 30% of the length is determined genetically but the other 70% is under one's own control determined at least in part by one's lifestyle and choices in life. Smoking, drinking to excess, drug abuse, junk food, excess sugar or salt, abnormal stress, disease and infection, all cause the telomeres to shorten, and so then will one's lifespan. Someone with high cholesterol or heart disease is likely to have shortened telomeres, so if BG is administered in

the right amount, this condition can be improved and the telomeres consequently lengthened. The same applies if one neglects to take action against oxidation or free radical damage. Chronic inflammation, as opposed to acute, can go on unnoticed for years, yet will be eating away at the optimal length of the telomeres. The third major cause is glycation, caused by the destructive force of sugar, found in bread, sauces, fruit juices and sodas, salad dressing, tomato ketchup, to name but a few! After a while, increasing chronic or even acute inflammation can result, damaging almost every tissue in the body, leading to such conditions as high blood pressure, heart attacks and a host of other conditions, all of which can be prevented to some measure or even avoided by taking BG. All these conditions contribute to aging, which in itself has to be the subject of another study and many books!

Bibliography

Hertzog, Christopher. (2013) Live Younger, Live Longer. booksmango.com. Bangkok. Thailand.

Lay, Beth M. (2001) Discover the Beta Glucan secret. Health Learning Handbook. BL Publications, USA.

Mason, Roger (2001) What is Beta Glucan? Safe Goods / New Century Publishing. USA.

Parker, J. N. and Parker, P.M. (2004) Beta Glucan, a 3 in 1 Medical Reference Medical Dictionary, Bibliography & Annotated Research Guide. Icon Health Publications, CA. USA.

Varakamin, Somsak (2013) Beta Glucan. Chulalongkorn University Press. Bangkok. Thailand.

Vetvicka, Vaclav (2011) Beta Glucan, Nature's secret. Random House. USA.

www.buybetaglucan.com