PENTOSAN POLYSULPHATE

A MEDICINE MADE FROM BEECH BARK

A commentary on a 50 year old medicine which raises the question:
Why is pentosan polysulphate not a treatment option?

by
Linda Curreri

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Dedicated to

Dr Stephen Dealler, Lancaster, England
&
Johnathan Simms, Belfast, Northern Ireland

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Note on the author.

Linda Curreri had rheumatoid arthritis for 28 years, from 1974 at age 26.
In 2001 her GP began treating her with muscular pentosan polysulphate injections. Over the following three years, blood tests showed conclusively that the rheumatoid factor had returned to a normal limit and no health anomalies were present.
She experienced not one adverse effect from this medicine.
Her health is undeniably in very good shape.
The same cannot be said of her musculoskeletal system which was severely damaged by the disease.
Her *Journal* brings the many profound facts about this medicine from beech bark to our attention and includes an account of her efforts over four years, to source pentosan polysulphate.

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PREFACE

Pentosan polysulphate *[known also as sodium pentosan polysulphate, pentosan, PPS]* is an organic medicine which is made of a sugar extractedfrom the bark of beech trees. Pentosan polysulphate safely and effectively supports and enhances the body's defence and repair systems and the growth of new tissue. Pentosan polysulphate is a prophylactic *[prevention]* medicine. I call this medicine a cure. But to suggest that a medicine can cure diseases is a very bold statement. It is a claim that even scientists are forbidden to make. But pentosan polysulphate may actually be a cure.

Following my efforts over four years to source the medicine, my extensive research into it and first hand experience of being treated with it against rheumatoid arthritis, I have been inundated with questions about pentosan polysulphate, the most obvious being why aren't they using it? They being doctors of medicine.

A personal story is also woven through this commentary. I touch on how I discovered pentosan, the onset of rheumatoid arthritis, briefly over-view conventional drugs and tell how my path of enquiry led to one of the UK's top medical microbiologists and leader in pentosan research and a friendship that continues today.

The aim of writing this Journal is to inform the public about pentosan polysulphate, a medicine most people have never heard of. I hope that the information [referenced] provided which includes excerpts from my correspondence with health authorities and medical experts, and tracks my venture to source pentosan raises questions, provokes discussion and will enable people to judge its merits and conclude for themselves if it should be a treatment option.

Linda Curreri
Dunedin, New Zealand.
January 11 2007

INTRODUCTION

Bring me a wheel of oaken wood,
A reign of polished leather,
A Heavy Horse and a tumbling sky,
Brewing heavy weather.

Heavy Horses, Jethro Tull

My introduction to pentosan polysulphate came about in May 1996 while on a visit to Australia. I had stitched what turned out to be an impressivetapestry of the 1978 Jethro Tull Heavy Horses album cover and decided to gift it to Tull. This was arranged with the NZ promoter but two weeks before their tour of New Zealand and Australia, the groups flute wielding leader Ian Anderson was rushed to hospital in Sydney with a leg thrombosis. Their concerts were cancelled and there was disappointment all around. Jethro Tull in concert would have been a spectacular event and they would not receive the tapestry. My neighbour Jock Benfell said "Let's go *[to Australia]* I'll pay!" Deal! Three days later we flew to Sydney. It turned out that Jock's brother Brian living in Melbourne, was an acquaintance of the Australian promoter Paul Dainty and so we headed there. The superbly framed tapestry was farewelled from Brian's home on its journey to Ian Anderson who was convalescing in Sydney after successful treatment. He was delighted with it.

While staying with Brian and his family at their home at the Oaklands Hunt Club near Melbourne, Brian the clubs Master of the Hunt, upon learning that I had rheumatoid arthritis raised the subject of a medicine used by veterinarians to treat animals with arthritis. He handed me a leaflet about the medicine called Cartrophen(r) *[pentosan polysulphate]* and suggested I ask my doctor about it when I returned to New Zealand. Some months earlier his main mount Grey had suddenly developed lethargy and an inability to jump and was retired to pasture. A Veterinarian member of the hunt club, suggested to Brian that he inject Cartrophen into the muscles of his champion show jumper. He did this and Grey "immediately became like a teenager running and jumping about the paddock." That season Brian led the hunt on Grey.

When I returned to New Zealand I took Brian's advice and contacted a rheumatologist about pentosan polysulphate. This first enquiry became six years of research into the medicine. I read dictionaries of biology from cover to cover to understand the basic meaning of the complicated language which guards the approaches to the science and questioned the disinterested, almost negative stance of the medical profession and health officials towards this sulphated sugar from beech bark.

Learning about pentosan polysulphate was exciting and alarming but if Ian Anderson had not fallen seriously ill in Sydney, my extraordinary adventure would not have happened. I must send him a copy of this journal.

'Search for the truth is the noblest occupation of man,
its publication is a duty'.

Madam de Stael 1766 - 1817

PENTOSAN POLYSULPHATE

CHAPTER I

THERE IS NO CURE.

Cure:
Restoration of health; recovery from disease.
An agent or method that restores health; a remedy.
A medicine that cures. [51]

Medical science has a mantra - “there is no cure” *[for diseases]*. This is usually the punch line when spokespersons for the medical profession are discussing diseases in public forums and the media. The huge numbers of people globally who continue to suffer and die from diseases certainly confirm this statement. In past centuries, pioneering scientists discovered and studied the principles which govern the conception, growth, disease and death of the human organism.[1] During the 20th century these epoch making discoveries became specialised fields of medicine so numerous it does not seem possible that scientists have not yet discovered how to rid the body of disease and restore health - cure disease.

If a medicine capable of doing all of the following effectively and safely existed, would doctors of medicine use it to treat their patients?

1. Support and enhance the bio-synthesis of DNA, RNA.
2. Support and enhance synovial fluid to optimally protect cartilage.
3. Inhibit degrading enzymes such as collagenase, metalloproteinase, tumour necrosis factor etc.
4. Mobilise blood clots, increase blood flow and prevent the build up of fibrin, fats and cholesterol deposits.

Apparently not. But why not because such a medicine does exist. It is called pentosan polysulphate and it has been used clinically in many European countries for over 50 years to treat a wide range of illnesses.

PENTOSAN POLYSULPHATE - PHARMACOLOGY [2]

A closer look at the multiple therapeutic effects [modes of action] of this medicine:

1. Supports and enhances the macromolecular bio-synthesis by chondrocytes of DNA, RNA, collagen, proteoglycans and extra-cellular matrix. Basically this means that pentosan helps our DNA to correctly produce the proteins which make all of our connective tissues, every part of us.

2. Supports and enhances synovial lining cell synthesis of synovial fluid components, especially hyaluronic acid, which keep the fluid functioning optimally as a lubricant and pro tector of the cartilage surfaces. Ensures the primo maintenance of our body’s joints.

3. Inhibits degrading enzymes and /or mediators implicated in the degeneration of cartilage, extra-cellular matrix and synovial components. i.e. hyaluronidase, collagenase, metalloproteinases, cathespins, interleukin-1, tumour necrosis factor *[TNF]*, PGE2.
Very simply put, diseases and infections are stopped in their tracks.

4. Mobilises blood clots; blood flow and perfusion of joint tissues and subchondral bone is increased as a result. Fibrin, lipids and cholesterol deposits are also mobilised, cannot build up. Cardio-vascular activity. Ensures optimal blood supply and circulation; prevents arteries from clogging up.

[NB: A copy of pentosan polysulphate pharmacology minus authors comments can be found on page 64]

Pentosan polysulpate acts on the underlying causes of disease, directly stimulating healing and repair. [27]

Heal - restore/return to health; repair, cure. [51]

German Origins
In Germany in 1947, Dr Wilhelm Benend synthesised a new medically active substance called sodium pentosan polysulphate. Two years later in 1949, Dr Benend established a small pharmaceutical company in the south of Munich called Bene-Arzneimittel GmbH. The enormous experience gained from the intensive research with sodium pentosan polysulphate led to the development by this company of numerous finished medications that found large international acknowledgment. Sodium pentosan polysulphate quickly gained a huge reputation with physicians and patients due to its outstanding characteristics in a number of treatment areas. Over the counter preparations of pentosan polysulphate have been developed by Bene-Arzneimittel GmbH as well as those requiring a prescription. [29]

What is pentosan polysulphate?
Pentosan polysulphate is a sulphated sugar. It is a generic, water-soluble medicine made of the xylose sugar in beech bark. Pentosan is the polysaccharide of the monosaccharide pentose sugar. The negative sulphate groups enable pentosan to reach high concentrations in extra-cellular matrix, the defining feature of connective tissue. Simply put, pentosan polysulphate is a sulphated carbohydrate. [50]

Is pentose sugar important?
Yes. Pentose sugar is unique. Unlike other carbohydrates i.e. glucose, fructose, lactose, maltose which are 6-carbon *[hexose]* sugars, pentose sugar is a 5-carbon molecule which has a crucial role in human biology- pentose is the sugar component in DNA, our genetic code. [50]

DNA is Deoxyribose-Nucleic Acid; deoxyribose is pentose sugar. If pentose sugar *[D]* is removed from DNA, only NA - nucleic acid - remains. This also applies to RNA. Ribose-Nucleic Acid; ribose is also pentose sugar. [50]

Pentose is indeed a very important sugar.

1999

In this year in particular, the science establishment launched DNA at the lay world. This was mainly to tell the public that the Age of genetic engineering had well and truly arrived. Their doing so at the dawn of the 21st century was pure theatre. Their explanation of DNA in layman's terms usually goes no further than it is the genetic code. The more mysterious and complicated the terminology is, the more likely lay people will stay as far from the realities of GE science as possible Eventhe word deoxyribonucleicacid turns people off. That DNA contains a sugar is almost never mentioned.

Healthy DNA = healthy body

DNA does much more than simply provide the traits we pass onto our off-spring. It also provides the blueprint for essential functions such as the activity of specialised enzymes and the making of proteins that carry out all of our cellular, tissue, organ and bodily functions.

Damage to a cell's DNA prevents proper function and can lead to cell death. Tissue damage arising from the death of many cells often causes impaired organ and bodily function, resulting in disease. DNA damage is known to occur following exposure to oxygen free radicals, ionising radiation, ultraviolet light, smoke, asbestos or silica dust, pesticides, disinfectants, dioxins and other chemicals. DNA damage can be repaired by any of a number of essential repair mechanisms found in our cells. Eating healthy food especially fruit and vegetable's, enhances DNA repair processes and hence reduces the incidence of disease. [57]

Pentosan polysulphate repairs DNA damage

Pentosan polysulphate is a reagent [p30] which in chemical terms is a substance used in chemical synthesis and analysis. The prefix 're' indicates the return to a previous condition, a withdrawal. Pentosan not only enhances DNA activity, it also repairs damaged DNA, returning it to an undamaged condition and hence health is restored, especially whengiven sooner rather than later.

Prime status

It could be said that pentose sugar claims the prime status in human biology as it does after all define the nucleic acids that contain our genetic code. Without this sugar DNA and RNA do not exist! neither do living organisms. Pentose sugar is without question absolutely crucial for life to exist.

Pentosan polysulphate is a medical preparation of pentose sugar.

SUGAR/CARBOHYDRATES

Types of Carbohydrate [76]

Name	Structure	Location
Glucose	(C6-H12-O6)	Sweet Fruits
Fructose	(C6-H12-O6)	Honey, fruit juice
Lactose	Glucose + Galactose	Milk
Sucrose	Glucose + Fructose	Sugar cane
Starch	Repeated glucose units	Potato tuber
Glycogen	Repeated glucose units	Liver
Cellulose	Repeated glucose units	Cell walls (plants)
Ribose	**(C5-H10-O5)Pentose**	**RNA**
Deoxyribose	**(C5-H10-05) Pentose**	**DNA**

Sugar - Villain or scapegoat?

According to health guru Leslie Kenton “We have screwed up what we are genetically programmed for. We were not programmed for sugar. It is in no way beneficial to us.” [44]

In the 21st century it is a popular opinion that, after having consumed sugar for over a thousand years it is now extremely bad for us. There are many scientists who oppose this view and also the view that sugar causes obesity and diabetes. It is however a scientific fact that sugars *[carbohy-drates]* contain nutrients which are required for good health.

The ‘sugar police’ are frantically lobbying for sugar to be officially declared unsafe and as such removed from all manufactured food and drinks, and possibly supermarket shelves. Their claim that the high incidence of tooth decay, obesity, diabetes and hyperactive children *[kids who run and dance about while loudly expressing their joy at being alive]*, is caused by eating sugar is bordering on the absurd. Of course the consequence of that human folly gluttony, which is a common sight these days, cannot be good for ones health.

It is common knowledge that improving daily oral hygiene will help prevent tooth decay and that reducing the intake of foods saturated with animal and chemically altered *[hydrogenated]* trans fats, encouraging children to walk, and horror upon horror actually run occasionally, would greatly reduce their chances of becoming fat and possibly diabetic. And those who are noisy and active? Why suppress this perfectly normal state of being?

'Sweet tooth' In Our Genes.

As DNA contains pentose sugar, humans are in fact genetically programmed for sugar- by sugar.

The ultimate fuel-injection
Sugar is a vital source of fuel for our body. Our cells are dependent on the ingestion of sugars [carbohydrates] along with other nutrients, to power their essential functions such as food metabolism, the growth of new tissue, the transport of molecules and ions throughout the body, nerve transmission and muscle contraction. It could be said that pentosan poly-sulphate is the ultimate fuel source as it is literally an injection of pentose, the sugar of DNA.

PENTOSAN POLYSULPHATE, A PROPHYLACTIC MEDICINE

Prophylactic -Acting to defend and protect against or prevent something, especially disease. [51]

'It is currently unclear that the medical profession has reached specific ideas on the use of prophylactic drugs. However any doctor that knew the actions of sulphated polysaccharides would consider their use, particularly pentosan polysulphate - because of low side effects. Individual doctors when considering the potential that pentosan represents and the removal of major worries from the patient, would I expect, accept the use of pentosan polysulphate either as an injectable or oral form.' Dr Stephen Dealler [19]

[Does the existence of prophylactic compounds such as pentosan polysulphate, which protect against and prevent disease developing, deem 'there is no cure' to be a misleading claim?]

CJD
"The Edinburgh research is very exciting, pentosan does not just prevent the disease from progressing in animals, it actually gets rid of it. The potential importance of this drug to humans cannot be underestimated." Dr Stephen Dealler [48]

SAFETY

Is pentosan polysulphate safe?
1. As pentosan polysulphate is not derived from animal or bacterial sources it is therefore free of contaminating prions, proteins or phospholipids. Pentosan does not compromise biological integrity. [2]

2. Medical research has concluded that pentosan polysulphate has an amazingly low toxicity, it is practically non-toxic. Allergic reactions that require the therapy to be stopped even in long-term treatment are extremely rare. [3]

3. In Europe between 1964 and 1989 over 120 million injections and over a billion oral doses of pentosan polysulphate were used, with estimated usage in over 13 million patients. No adverse reports of carcinogenic *[cancer]* effects were reported. [4]

4. Since pentosan polysulphate is approved for marketing for human usein most EEC countries, Australia, South Africa, and the Scandinavian countries, the rigorous requirements for chronic toxicity, muta-genicity [genetic damage] and terato-genicity *[foetal damage]* have been satisfied. [2]

5. New Zealand Food Standards Authority exempt pentosan polysulphate from Maximum Residue Limit *[MRL]* - 21 July 2004.

Pentosan polysulphate is exempt from the requirements for a MRL when used as a treatment aid for non-infectious inflammatory joint disease, traumatic arthritis, degenerative cartilaginous joint disease and osteoarthritis.

Toxicological Assessment: There are no toxicological issues with this substance. No international Maximum Residue Limits have been set on pentosan polysulphate. [5]

The Role of Maximum Residue Limits
'To produce high-quality, low-cost food, farmers use chemicals to control crop attack by insects, disease and weeds and to maintain healthy farm animals. Residues from these chemicals can find their way into the food supply. Food Standards Australia New Zealand ensure that the use of chemical products and any subsequent chemical residues in food are safe for human consumption.' [5]

[However, despite the unfathomable equations which determine what are considered to be safe consumable amounts, residues of these poisons accumulate in the body fat of animals and humans and eventually cause injury and illnesses, such as skin lesions, reproductive disorders and cancer, or death.]

Pentosan polysulphate is unquestionably safe.

INDICATIONS

Pentosan polysuphate has been used clinically in Europe for over 50 years to treat many diseases. They include:

Myocardial infarction, *[heart attack] coronary thrombosis, Coronary sclerosis [hardening of heart blood vessels]* Cerebral thrombosis, Cerebral sclerosis *[hardening of brain nerves]* Arterial-sclerosis of the retina Degenerative and diabetic artery diseases Presence of excess fats and cholesterol in the blood. Prevention *[prophylaxis]* against thrombosis and embolism after an operation. Embolism *[thrombosis which travels]* [3]

Topical cream, gel and ointments are used to treat many infections: Infected injuries, cell death of wounds, ulcers; second and third degree burns, skin repair, acne and other skin disorders, bruises, softening of scars, sports injuries. [6]

Osteoarthritis in working and racing animals [2]

[Arthropharm's website [2] has clinical scientific information and references on pentosan research in osteoarthritis. Their last statement confirms that pentosan polysulphate is approved for marketing for humanuse in most EEC countries, Australia, South Africa, and the Scandinavian countries. (Safety 4) However regardless of the extensive research which shows that pentosan improves this joint condition in both humans and animals, Cartrophen, the pentosan polysulphate trade name for osteo-arthritis, is registered for usage by veterinarians to treat animals with arthritis but does not yet appear to be officially indicated for humans with this disease even though it can be purchased directly from Arthropharm Pty Ltd by doctors to treat a patient who has osteoarthritis.]

Bladder infection *[cystitis]* [4]

CHAPTER II

INTERNATIONAL DEBUT
JONATHAN SIMMS & vCJD

Pentosan polysulphate made international headlines in December 2002 when UK High Court Judge Dame Elizabeth Butler-Sloss ruled in the High Court in London that Belfast teenager Jonathan Simms be given the medicine directly into his brain to treat the fatal brain wasting disease vCJD [a variation of Creutzfeldt-Jakob disease, also called mad cow]. Don Simms, Jonathan's dad, was forced to appeal to the high court for permission on behalf of his dieing son, because his passionate efforts to get the treatment for Johnny were being stonewalled by opposing factions within the science establishment. They were advising the Government against its use to treat this hideous disease. Since at least 1978 scientists have used pentosan polysulphate in laboratory research on the brains of animals infected with TSE's *[transmissible spongiform encephalopathy]* such as CJD and scrapie. Their research showed it to be effective in getting rid of these brain-rotting diseases. Twenty years later when vCJD emerged the UK Government was advised not to allow pentosans use to treat the disease, siting toxicity as the main reason. It was even suggested by some scientists that pentosan polysulphate would kill Johnny. This was ludicrous reasoning because the disease was rapidly doing just that.

Jonathan Simms made medical history as a result of Dame Elizabeth's sensible ruling. He became the first human to have pentosan polysulphate administered directly into the brain. *[The pentosan molecule is too large to cross the blood brain barrier, hence the need for direct infusion]*. Johnny was diagnosed with vCJD in October 2001 at age 17. Now twenty three and a half, he has survived the disease longer than any CJD patient and has received pentosan for 5 years with not one adverse effect. During this time he has remained stable and strong, has gained weight and height, can say single words, swallow, recognise family and soccer heroes, music etc, and late in 2004, he was officially cleared of having this fatal disease. Unfortunately its devastation has left him with brain damage. If Johnny had been given pentosan when his parents pleaded for it, there is a strong chance he would not be so cognitively disabled, if at all.

Scientist ignored by UK Government

Against the tide of objections one British scientist vocally led the few who were in favour of using pentosan polysulphate to treat vCJD. Dr Stephen Dealler a microbiologist, medical consultant and a leader in pentosan research in animals, advised the UK Government in 1998 to allow the use of pentosan as a prophylactic against vCJD. Dr Dealler advised that it be a treatment for patients with the disease and also for those who may have become infected as a result of medical negligence i.e. contaminated blood or medical instruments. Unfortunately for people dying of vCJD the Government ignored the reasons he put forward favouring its use, which highlighted pentosans amazingly low toxicity, and went with the presentation against its use, put forward by the Spongiform Encephalopathy Advisory Committee *[SEAC]*.

It turned out that Dr Dealler was absolutely right. As a result of JohnnySimms's remarkable and safe recovery, the UK Department of Health although yet to officially endorse the use of pentosan polysulphate for nvCJD now allow it as a treatment option for current patients and those newly diagnosed with any form of it. [18]

BSE scare in New Zealand
In early August 2003 the possibility that a young Waikato farm worker had variant Creutzfeldt-Jakob disease *[vCJD]* sparked nationwide fears of BSE or 'mad cow' disease in the national beef herd. Tests confirmed the man did not have vCJD. Attention was centred on the effect a positive diagnosis would have on the NZ beef export industry rather than the effect the disease would have on the young mans life. The diagnosis left open the possibility of the man having the also fatal sporadic CJD. Ministry of Health spokesperson Dr Stewart Jessamine said that had the diagnosis been new variant CJD, pentosan polysulphate would have been made available to the patient under Sect 25 the Medicines Act 1981.*[8-9 '03, www.xtra.co.nz]*

Variant and sporadic CJD are the same disease, Creutzfeldt-Jakob. Therefore pentosan should in fact be a treatment option for patients with either form of it.

ARTHRITIS TREATMENT - VISCO-SUPPLEMENTATION

As we age, the synovial fluid that lubricates our joints loses the ability to protect the surface layer of cartilage. In all arthritic conditions in human and animal joints [osteoarthritis, rheumatoid arthritis, gout etc] the elasticity and viscosity of synovial fluid are considerably decreased compared to those in the normal joint. This leads to major and very painful problems in the joint. [13]

The concept of visco-supplementation as a treatment for the joint wasdeveloped by Endre Balazs and co-workers in the late 1960's. It's therapeutic goal is to restore the balance of function and structure that exists in healthy joints. *[Homeostasis]*

Compounds/agents used for visco-supplementation are injected directly into either the joint or muscle. [13]

Pentosan polysulphate a visco-supplementation agent
Two agents that were used for visco-supplementation Rumalon, Arteparon, both made of bovine cartilage, were withdrawn in the late 90's with the outbreak of BSE or mad cow disease. [8] Another called Synvisc was first marketed in New Zealand late in 1999 but as this is made of chicken combs it too has hopefully been withdrawn due to the bird flu virus. Pentosan polysulphate is also a visco-supplementation agent. Being a sugar from beech bark pentosan has no such safety concerns. *[Safety 1]*

'Visco-supplementation directly stimulates joint healing and repair, reversing the effects of osteoarthritis. The final key to this process is the prevention of pain.' [13]

[New Zealand doctors and rheumatologists do not offer visco-supplementation treatment option to public health patients. They maydo in the private sector.]

VETERINARY USE

Pentosan polysulphate is used by Vets to treat animals that have osteoarthritis and other arthritic joint disorders. Comments on veterinary use speak for it:

1. "The introduction of pentosan polysulphate was revolutionary and vet's are well aware of the therapeutic benefits of this remarkable product." [71]

2. “Pentosan polysulphate is the only class of drugs used to treat osteoarthritis which relieves pain by actually improving the condition of the joint.” [7]

3. “Approximately 80% of dogs show a worthwhile improvement, most of which is not evident until the third or fourth injection. This is a very under utilized treatment. It is virtually side-effect free.” [7]

4. “Take for instance Cartrophen *[pentosan polysulphate]* which is being billed as a hope for human arthritis sufferers. However, Cartrophen isbeing freely used on horses and dogs for various ailments with excellent results. And what makes it even better is that it doesn't produce a positive sample.” [12]

5. ‘Sophisticated’ pentosan for Australian camels.
Pentosan polysulphate is the most sophisticated approach to long term management of osteoarthritis in camels. It is effective by both intra-muscular and intra-articular injection. Pentosan Equine(r), which contains sodium pentosan polysulphate, stimulates healing and repair, reversing the effects of osteoarthritis. Rather than simply cover up pain, pentosan polysulphate directly stimulates joint healing and repair. Pentosan Equine will not cause kidney damage as seen with NSAID’s in camels. [27]

[Pentosan polysulphate, trade name Cartrophen(r), is registered in New Zealand for use against arthritis in animals but not for humans because the company, Arthropharm, has not applied to have it registered for such usage in this country.] P50 Min of Health Annette King.

ARTHROPHARM PTY, LTD.

Arthropharm Pty, Ltd *[known also as Biopharm]* based in Sydney Australia is the pharmaceutical company which markets pentosan polysulphate for animals and humans with osteoarthritis. Their product trade name is Cartrophen. Arthropharm also has exclusive Australasian distribution rights for the pentosan preparations of their German partner bene-Arnzeimittel.(20) The trade names are Tavan-SP54, Thrombocid and Fibrezym.

Arthropharm's patent inventors Professor Peter Ghosh and Dr David Cullis-Hill are world leaders in pentosan polysulphate/arthritis research in both animals and humans. Ghosh has top credentials in human research and veterinary surgeon and chairman of the company Cullis-Hillin animals.

In their 1992 patent US 5145841 **‘a method of treatment of arthritis, rheumatism and inflammation of connective tissue’** using pentosan polysulphate [9], Peter Ghosh and David Cullis-Hill make mention of the effective and safe therapeutic activity of sulphated sugars *[poly-saccharides]* other than pentosan polysulphate. **They also make it quite clear that prolonged therapy with anti-inflammatory and cortico steroid drugs, which have been the treatments of choice for arthritis and other disorders for many decades now, can lead to the breakdown and failure of connective tissues, particularly joint cartilage.**
It is also explained how pentosan polysulphate prevents the growth factors of tumours. The following are excerpts from this patent. [9]

Re: Conventional treatments

'Arthritis and other related inflammatory conditions are generally debilitating, painful diseases that affect the joints of a significant portion of the human and other animal populations.' 'One of the earliest comp-ounds to be used to treat inflammatory disease, which was found to have some effect in relieving pain, was salicylic acid. Unfortunately, this comp-ound was found to be excessively irritating to the gastrointestinal tract. Accordingly, many derivatives of salicylic acid were evaluated for anti-inflamm-atory activity, which resulted in the identification of aspirin as an effective and relatively safe anti-inflammatory compound.'

'Since the discovery of aspirin, many other compounds *[NSAID's]* have been produced which are claimed to be more effective than aspirin. These include such compounds such as Ibuprofen and more recently Naproxen and Sulindac. Strong anti-inflammatory potency has been achieved with the corticosteroids *[e.g. hydrocortisone, dexamethasone, prednisolone, methyl prednisolone, betamethasone]* and these are also widely prescribed.'

'However, all of these compounds and compositions whilst displaying satisfactory analgesic anti-inflammatory properties, in that they relieve joint pain to a certain extent in most cases, any beneficial effect that they have in restoring joint function is usually only transitory. Furthermore, their prolonged use while providing continuing pain relief for many sufferers can lead to breakdown and failure of connective tissues, particularly articular cartilage which in fact may exacerbate the problem.'

Re: Pentosan a potent inhibitor of degrading-enzymes

'The compounds of the invention have particular usefulness in the treatment of rheumatoid arthritis, osteoarthritis and related inflammatory joint conditions as well as cancer and wound healing. These compounds would also be expected to be antiviral.'

'This usefulness stems from pentosan's ability to inhibit the release and the action of degrading enzymes. The importance of this inhibition is that in osteo and rheumatoid arthritis, the components of the connective tissue of joint cartilages are depleted due to excessive degradation by these enzymes.' Pentosan polysulphate inhibits activity without harming healthy cells.

Re: Cancer

Tumour growth dependent on extra-cellular matrix breakdown.

Extra-cellular matrix is the material that surrounds each cell. It regulates a cell's dynamic behaviour and is the defining feature of connective tissue. Preventing the breakdown of this matrix is crucial in the fight against cancer and other degenerative diseases.

'In all tissues, tumour cell metastasis *[spread]* is dependent on the breakdown of the extra-cellular matrix to allow the neoplastic *[cancer]* cells to rapidly multiply and migrate to other sites. A proliferating tumour mass also requires a good blood supply for survival and breakdown of the matrix to allow penetration of blood vessels is also required before

a tumour can expand within the host tissue. Tumour cells and activated cells which line lymph and blood vessels achieve this objective by the release of degrading enzymes which can directly and indirectly degrade the extra-cellular matrix.'

'The inventive metallo polysulphated polysaccharides are potent inhibitors of the destructive enzymes produced by mammalian tumour cells lines and thus have potential use as anti-cancer/anti-metastatic agents. The preferred polysaccharide is pentosan polysulphate.' [9]

NB: **Pentosan polysulphate pharmacology**
3. Inhibits degrading enzymes and /or mediators implicated in the degeneration of cartilage, extra-cellular matrix and synovial components. i.e. hyaluronidase, collagenase, metalloproteinases, cathespins, interleukin-1, tumour necrosis factor *[TNF*], PGE2.

Re: Healing and repair benefit

'Moreover, it has been found that the compounds of the invention are capable of stimulating cell division and DNA synthesis in a variety of connective tissue cell lines and together with their ability to promote matrix component *[proteoglycan, hyaluronate and collagen]* bio-synthesis, are of immense benefit in the healing and repair of damaged tissues.'

'Repair of connective tissue, including cartilage in osteoarthritis, requires DNA synthesis and the rapid proliferation *[mitosis/multiplying]* of cells within the tissue matrix. Many non-steroidal anti-inflammatory drugs and corticosteroids suppress this important cellular process and can impair recovery.'

NB: **Pentosan polysulphate pharmacology**
1. Supports and enhances the macromolecular bio-synthesis by chondrocytes of DNA, RNA, collagen, proteoglycans and extra-cellular matrix.

The last paragraph of the 1992 US 5145841 patent reads:
'Although reference has been made to the utility of the invention in treating osteoarthritis and rheumatoid arthritis, other disease states that could be usefully treated include: bursonitis, tendonitis, tendovaginitis, and related soft tissue inflammation; wounds and healing of burns; skin repair, acne and other dermatological acute disorders; topical application for superficial thrombosis, haematoma, ulcus crusis *[leg vein ulcers]*, softening of scars; topical anti-viral and pancreatis, emphysema and bacterial invasion where excess proteolytic *[destructive enzyme]* activity occurs.' [9]

Arthropharm patents include

1. 1992, Arthropharm Pty Ltd were issued patent US5145841 for A method of treatment of arthritis, rheumatism and inflammation of connective tissue using xylan *[pentosan]* polysulphate [9]

2. 1992, Arthropharm Pty Ltd. were issued patent US5514667 for A Method for topical treatment of herpes infections -'It will be seen from these Examples that this invention provides effective treatment of a number of topical vital *[fatal]* and neoplastic *[cancer]* disorders. The treatments may be readily administered given that the compositions used for the treatment are in dosage forms such as creams, ointments and lotions.' [9]

3. September 1997, Arthropharm Pty. Ltd were issued patent US5668116 for A method for inactivating viruses using pentosan polysulphate. (http://www.delphion.com)

4. 2003, Arthropharm Ltd. were issued patent US6593310 for treating osteoporosis and other bone disorders.

Abstract: A method for treating osteoporosis which comprises administering to a mammal in need of such treatment an effective amount of a compound capable of maintaining the integrity of connective tissue, for example pentosan polysulfate isolated from beech wood hemicellulose.

'The present invention relates to methods for treatment of bone disorders, particularly osteoporosis, using low doses of polysulfated polysaccharides. For example treatment with low dosages of calcium pentosan polysulfate, reduces the occurrence or spread of osteoporosis by stimulating new bone growth directly or indirectly.' [21]

"This is what you need if you have arthritis."
[Dr Lay as he read the pentosan polysulphat Pharmacology. Feb '98]

"This'll work"
[Dunedin doctor Wayne Morris as he circled
Number 1 of the pentosan polysulphate Pharmacology. Feb. 25th '04]

"There is no cure for arthritis but it can be managed."
[Arthritis NZ appeal for money TV3. Sept. 27th '09]

CHAPTER III

RESEARCH

Pentosan polysulphate has been extensively researched for over 50 years. Apart from the long list of health disorders that it is used to treat, scientists have also studied its therapeutic effects on many other disease states. From all accounts pentosan is consistently, precisely effective.

Viruses

1. In 1988 researchers in Belgium determined that pentosan polysulfate is a potent and selective anti-HIV agent. Pentosan prevents viruses from attaching onto cells *[adsorption]*. They concluded that it yields great promise for the treatment of retrovirus infections in humans and the treatment of AIDS. [10]

2. Pentosan polysulphate and other sulfated polysaccharides are potent and selective inhibitors of various viruses, including the herpes group, vesicular stomatitis virus *[primarily a virus which infects animals which humans can contract]*, sindbis virus *[causative agents of encephalitis, rubella, yellow fever, and dengue]* and human immunodeficiency virus HIV. [10]

3. Pentosan polysulphate and other sulphated polysaccharides are currently approved or in trial for clinical use against dengue virus, Japanese encephalitis virus, West Nile virus, and Murray Valley encephalitis virus. January 2006. [49]

4. Pentosan polysulphate prevents cell to cell interaction and so infection *[HIV]* does not spread. [11]

5. Diseases Studied/Treated: Primary HIV infection, Kaposi's sarcoma. [72]

Cancer

Cancer is a disease in which abnormal cells divide out of control. The tissue mass that results from this malfunction is called a tumour which is 'a growth', an abnormal proliferation of tissue. Tumours can be benign *[non cancerous]* or malignant *[cancerous]*. A cancerous growth tends to invade and destroy nearby tissue and spread through the blood stream and lymphatic system to other parts of the body. [50]

Pentosan polysulphate: Anti-cancer properties

Like all cells, cancer cells require a constant supply of nutrients and oxygen in order to grow, divide and multiply. Without an adequate blood supply tumours will not grow. Tumours produce growth factors that stimulate the formation of blood vessels *[angio-genesis]* to provide them with the food and oxygen they need. Pentosan polysulphate blocks the production of these growth factors and hence the formation and spread of tumour blood vessels is stopped. The tumour being starved of vital nutrient's, withers and dies. This process is anti angio-genesis.

1. AIDS drug enters *[cancer]* clinical trial. (1990)
Pentosan polysulphate, a sulphated sugar, demonstrated significant anti-cancer properties in laboratory experiments with cells, as well as withanimals. The most important property of pentosan may be its ability to impair angiogenesis the development of a network of blood vessels, important for the growth of certain tumours. Pentosan polysulphate also appears to be able to prevent the binding of growth factors to tumours, thus affecting their growth. At the National Cancer Institute, Bethesda, Maryland and Georgetown University Medical Centre, Washington DC, researchers are conducting phase I trials with the drug. [14]

2. In 2001 Italian research showed that pentosan polysulphate inhibits tumour growth factors. Accordingly, phase I and II clinical trials have shown that it is well tolerated. [30]

3. Pentosan polysulphate, a sulphated polysaccharide binds and inactivates heparin-binding growth factor of tumours. [31]

4. Skin cancer - Research in 1992 showed that pentosan polysulphate blocks the growth factors in skin cancer *[Kaposi's sarcoma]*. [36]

5. Breast cancer - Excerpt: Mice treated with the drug AGM-1470 produced a decrease in tumour size. The decreased tumour size was not as marked as that produced by treatment with pentosan polysulfate. 1996. [23]

6. Prostate cancer- Title: Pentosan Inhibits Angiogenesis In Vitro and Suppresses Prostate Tumour Growth In Vivo. (1993) Excerpt: Pentosan polysulfate is a highly negatively charged polysaccharide which has activity against multiple tumour types in the preclinical setting. These data suggest that pentosan polysulphate may be a potent inhibitor of tumour-associated angiogenesis and may be an effective agent for the prevention and/or suppression of prostate cancer growth. [24]

7. Pentosan polysulfate decreases prostate smooth muscle proliferation and extracellular matrix turnover. (Benign prostate tumour). 2003. [25]

8. Pentosan polysulphate exhibited significant growth-inhibitory effects in prostate cancer cells in vitro *[lab]*. Pentosan polysulphate has also been shown to be an effective inhibitor of different types of tumours including breast and prostate cancer as well as heparin-binding growth factors in vitro. [34]

Hideous poison gets the nod.

Thalidomide and pentosan polsulphate were in clinical trials at the same time during the 1990's, for potential anti cancer *[anti-angiogenesis]* treatments.

Thalidomide was used in the 1950s and 60's as a sedative. It caused shocking birth defects in the new born babies of mothers who took the drug. It was an international scandal of Everest proportions. But this poison is back on the medicine menu once more. Thalidomide is approved for treating cancer in numerous countries including Australia and New Zealand, Turkey, Israel and the US. It is also used to treat wasting syndrome and severe mouth ulcers associated with HIV, and skin diseases, rheumatoid arthritis and other inflammatory conditions.[52] Thalidomide can kill the foetus or cause severe birth defects. Another major concern relating to its use is peripheral nerve damage. [53]

On December 18, 2003 New Zealand approved the use of thalidomide to treat multiple myeloma *[cancer]*. According to Palmerston North physician Dr Bart Baker "The availability of thalidomide represents a significant improvement in the treatment options for this difficult-to-treat patient population." [47]

[Significant treatment improvement? Surely no right-minded person could possibly reach this conclusion. Sixteen years after research showed that pentosan polysulphate significantly stops tumour growth it is not a cancer treatment option.]

Osteoarthritis. Double blind trials

1. Gonarthritis [knee arthritis]: On the early stages regeneration is possible, *[a double-blind trial using pentosan polysulphate]*. Engel J. et al. 1982 [2]

2. A double-blind placebo-controlled clinical study of a pleiotropic *[producing multiple effects]* osteoarthritis drug pentosan polysulphate, *[Cartrophen]* in 105 patients with osteoarthritis of the knee and hip joints. 1994 [2, 25]

3. A double-blind placebo-controlled study of intra-articular pentosan polysulphate *[Cartrophen]* in patients with gonarthritis-laboratory and clinical findings. Rasaratnam I., Ryan P., et al. 1996. [2]

4. The patho-biology of osteoarthritis and the rationale for the use of pentosan polysulfate for its treatment. Ghosh P. 1999. http://www.ibj.usyd.edu.au

Rheumatoid arthritis
Research published in April 2000 by Peter Ghosh and his co-workers in Tokyo, demonstrated that another formulation of pentosan, calcium pentosan polysulphate *[CaPPS]*, referred to as a new anti-arthritic drug, inhibits the enzymes that degrade the extra-cellular matrix of cells and cause joint destruction in inflammatory arthritis such as rheumatoid. The destructive enzymes are known as metalloproteinases, aggrecanases, and tumour necrosis factor (TNF). [67]

NB: **Pentosan polysulphate[sodium] pharmacology-**
3. Inhibits degrading enzymes and/or mediators implicated in the degeneration of cartilage, extra-cellular matrix and synovial components. i.e. hyaluronidase, collagenase, metalloproteinases, cathespins, interleukin-1, tumour necrosis factor *[TNF]*, PGE2.

Stroke/brain nerves
Researchers at Nagasaki University in Japan demonstrated that pentosan polysulphate could protect brain neurons against ischemia ***[restricted blood flow]*** and suggested that it has potential as a useful therapeutic agent for acute ischemic stroke. (29 Sept. '06) [45]

Kidney stones
Research showed that sodium pentosan polysulphate is an active inhibitor of calcium oxalate crystal growth. Pentosan polysulphate could provide a novel approach to the medical prevention of recurrent kidney stone disease.1984 [17]

Alzheimer's mediators

'Pentosan polysulphate blocks the activation of the mediator, C-reactive protein, *[a form of **amyloid**]*, which plays an adverse role in several chronic degenerative disease processes, including atherosclerosis, *[hardening and narrowing of the arteries]* myocardial infarction *[heart attack]* and stroke. It is believed to exacerbate a number of neuro-degenerative disorders, including Alzheimer's disease, multiple sclerosis and Pick's disease.' *[a progressive dementia]*

Pentosan polysulphate inhibits C-reactive protein activation at a very early stage and may have practical application as a C inhibitor.

This work was supported by a grant from the Jack Brown and Family Alzheimer's Disease Research Fund, and by a grant from the Alzheimer Society of Canada. 2002 [16]

[Pentosan polysulphate is being used clinically to treat myocardial infarction [heart attack] and atherosclerosis [coronary sclerosis] the hardening and narrowing of the arteries. Why is it not for Alzheimer's disease?]

Amyloidosis

Amyloidosis is a potentially fatal disease that occurs when substances called amyloid proteins build up in the body's organs. **Amyloid** is an abnormal protein usually produced by cells in bone marrow that can be deposited in any tissue or organ.

The most common type of the disease, primary systemic amyloidosis initially affects the heart, kidneys, liver, spleen, tongue, nerves and intestines. Serious conditions, such as decreased heart function and kidney failure, can result from organ malfunction. Secondary amyloidosis can occur as a result of an illness such as multiple myeloma, chronic infections *[i.e. TB and osteomyelitis*], or chronic inflammatory diseases such as rheumatoid arthritis and ankylosing spondylitis. Secondary amyloidosis mostly affects the kidneys, spleen, liver and lymph nodes. Other organs may also be affected. The protein that deposits in the brain of patients with **Alzheimer's disease** is a form of **amyloid**. [55,56]

As early as 1994, research has shown that pentosan polysulphate potently inhibits the accumulation of this abnormal form of protein.

David Lange

David Lange was diagnosed with amyloidosis just days before his 60th birthday, August 4th 2001. Four years later, two weeks after his 64th birthday he was dead. I heard the announcement that David was sick on Radio Pacific. Morning talk back host Bill Ralston was stumbling over the word '...am.. amyl.. am..' then finally amyloidosis, hurrah! By this time I had already shouted the word and was opening my pentosan documents. I recalled that Dr Stephen Dealler had stated that pentosan polysulphate was precisely active against amyloidosis in laboratory experiments. I phoned him and he said it certainly had shown positive results against this faulty protein folding disease and encouraged me to send this information on to David Lange. Understanding both the seriousness of the disease and the inhibiting effect pentosan has on it, Steve phoned our prime ministers office leaving details about pentosan and his contact information, but this went nowhere.

I immediately sent David a copy of the article I had written on pentosan polysulphate. He kindly replied with a letter saying that he was placing his trust in his medical team. His comment "I'm shrinking fast" was sad to read. His treatment included a multitude of blood transfusions over the 4 years of his physical decline. The disease was not checked and he wasted away,

suffering terribly. He also developed diabetes and two weeks before David died he had a leg amputated.

Urgency
Was there urgency? Did David Lange's doctors search through medical literature for anything that could stop the disease and save his life or did they merely accept medical dogma 'there is no cure'? As research has shown that pentosan potently inhibits the accumulation of amyloid proteins why did his doctors not treat him with this medicine? He would in all probability be alive today if they had.

Johnny Simms is here today because urgency drove Don his father to the highest court in the UK. As with amyloidosis, pentosan polysulphate was never before used to treat CJD *[mad cow]* in humans, never before administered directly into the human brain, but pentosan safely got rid of the brain rotting disease, it saved his life.

Would pentosan polysulphate help MS patients?
The following is an excerpt from research in 2002 on fibrin build-up which is a cause of multiple sclerosis. *[Pentosan polysulphate prevents the build up of fibrin. Pharmacology 4, p68]*

Fibrin deposits a cause of Multiple Sclerosis
'The body makes fibrin to allow blood to clot over a wound. These fibrin deposits are then cleared naturally and this seems to happen at the same time as nerve re-growth and repair. However, it can also accumulate in damaged nerves immediately following the injury preventing regeneration. Increased deposits of fibrin have been reported at the site of nerve lesions in multiple sclerosis patients. In the absence of fibrin, myelin sheath cells *[which surround and protect nerves]* are able to mature more quickly and can more efficiently re-myelinate damaged nerves.' 'Strikingly, the mice lacking fibrin regenerated crushed nerves significantly faster than mice with fibrin. These results point the way toward a potentially new treatment for nerve injuries and suggest that preventing the build up of fibrin deposits may be a way to enhance the nervous system's natural regenerative capacities.' [15]

From pentosan pharmacology[4]: ' ...fibrin, lipids and cholesterol deposits are also mobilised, cannot build up.'

A simple analogy: Place a rock *[fibrin]* on grass *[nerve myelin sheath]*, the grass dies. Remove the rock and the grass re-grows.

[Pentosan is indicated for the treatment of cerebral and coronary sclerosis and sclerosis of the retina. Why is it not for multiple sclerosis/]

Christopher Reeve

Christopher Reeve explained in an interview *[July 2000]* that he suffered from de-myelination, the same problem faced by patients with multiple sclerosis. "In my case, the damage to my spinal cord was caused by a haemorrhage in the centre of the cord, right at the second vertebrae, from the impact of breaking my neck. The haemorrhage caused the de-myel-ination of a large number of nerve tracts at the second vertebrae level." [35]

[Considering that fibrin causes de-myelination of nerves in multiple sclerosis, I often wondered if a build up of fibrin had caused de-myelination of the nerve tracts in his spinal cord and if so, as pentosanprevents fibrin build up, could it have improved his condition?]

CHAPTER IV

EXTRA! READ ALL ABOUT IT!

Thank You Nobel Laureate Maurice Wilkins

In April 1953, NATURE magazine published a scientific paper by Maurice Wilkins and his colleagues at King's College, London called 'Molecular Structure of Deoxypentose Nucleic Acids'. His use of the word deoxypentose instead of the more common deoxyribose, is absolute proof that pentose sugar is indeed the prime factor in our DNA. New Zealand born Wilkins shared the 1962 Nobel Prize for Med/Phys with Watson and Crick for establishing the molecular structure of DNA. [50]

Pentosan Polysulphate Classification [2]
1. Anti-viral
2. Anti-neoplastic [cancer]
3. Anti-coagulant
4. Anti-inflammatory
5. Anti-retroviral

Reagent
reagent - (chem.) is a substance used in chemical synthesis and analysis. re - (prefix) indicating the return to a previous condition, a withdrawal. miscellaneous - means having varying capabilities. [51] Pentosan polysulphate - is a miscellaneous reagent

AIDS Conference
In 1989 at the 5th International Conference on AIDS in Montreal, pentosan polysulphate methods of administration were outlined: Intramuscular *[IM]*, intravenous *[IV]*, subcutaneous *[SC]*, and oral *[absorption is poor]*. [13]

Executive Director UNAIDS
Belgian epidemiologist and microbiologist Professor Peter Piot, was appointed Executive Director of the Joint United Nations Programme on HIV/AIDS *[UNAIDS]* 1994. For three years prior to this appointment he served as the President of the International AIDS Society. [50]

Professor Piot cannot be aware that in1988 his countrymen, E. De Clercq and co-workers at the University of Leuven in Belgium, published research [10] that showed pentosan polysulphate is a potent anti-HIV agent and suggested it holds great promise for the treatment of AIDS, and that further research which has similar conclusions has been published.
Pentosan polysulphate is an officially classified anti-retroviral medicine. It is not toxic, is effective and very cheap. Placed alongside the drugs which are being used to treat this aggressive virus and it's fatal effects there is no contest. If Professor Piot knew about pentosan polysulphatesurely he would direct its use to treat the global millions who have HIV and AIDS? It would be unconscionable not to.

Prototype for drug design
According to a research article in the National Cancer Institute Journal in 1991, "pentosan

polysulphate appears to be a prototype for the development of tumour therapy's based on the targeting of growth factors." (26) And from Italian cancer research in 2001 "these observations identify PPS as a prototypic molecule for the design of new drugs for the treatment of AIDS and AIDS-associated pathologies *[health disorders]* including Kaposi's sarcoma, skin cancer." [30]

[This is a major revelation because it explains why pentosan seemed to have been claimed by scientists as a research tool instead of being a universally available medicine for degenerative diseases other than cardio-vascular related. A prototype is an original model. It is apparent that chemists who design drugs for pharmaceutical companies are studying pentosan polysulphate so that every detail of its actions can be copied in an attempt to emulate the many aspects of its remarkable pharmacology.]

Removes dark circles
"A PS [surgeon] who has removed 2 of my moles suggested this for dark circles. It's a French cream (Hemoclar) but the molecule is Pentosan polysulphate, and it is for bruises and veins. Worth a go if you can get it. It has been helping me." Sarah. 25-11-2005. [22]

Pentosan Polysulphate - Hemoclar, rescues Pigeon
I came across the following delightful though urgent sharing of information about how to save an injured pigeon: http://www.pigeons.biz/forums

"I found this pigeon with a wing that's got a bullet through it at the club today. There's a shooting place where they shoot birds, that is SO horrible. I'm leaving the city tomorrow and I'm taking her with me but I won't be able to contact the site so PLEASE help me now!" Nouran, Cairo. Egypt. 2-8-2003

Terry, USA: "Hello Nouran and welcome to pigeons.com. Did you clean the wound area when you got the bird? Does it look infected? Do you have any antibiotics or other medicines that might be able to be used for a pigeon? Please post back and let us know what we have to work with in the way of medical care. Thank you for helping this poor bird."

"The wound has this weird bluish discoloration around it and it looks a bit red and shiny, I think it's infected. My mum's a doctor and she has some Hemoclar, will that help?" Nouran. "I'm not familiar with Hemoclar and did a quick web search on it .. it appears to be a type of antibiotic cream .. is that correct? Keep posting here, other members will be along shortly with additional assistance." Terry.

Hilary, Israel: "It sounds like the wound is infected. Can you get antibiotics from a vet. You also need to establish whether there are any fractures in the wing?"

"My mum put Hemoclar on the wound and she carefully cleaned away any traces of blood, is there anything else we can do? It's about 1 o'clock in the morning here and I'm leaving Cairo at eight A.M.! I just want to make sure she'll be ok, where I'm going there aren't any vets." Nouran.

"Yeah, that's right, Hemoclar is an antibiotic cream. The bird's much better now, she's very inquisitive but her wing is still a bit sore. She hasn't got any fractures. See you all in two weeks! Thanks" Nouran, Cairo, Egypt. August 3, 2003.

Lab rats

"Animals of the nonhuman variety do seem to be the exclusive beneficiaries of the injection dosage of pentosan polysulphate; perhaps I should dress up as a rodent and curl up outside the door of an appropriate laboratory." [68]

Sports Medicine

Rugby - " I cannot over emphasise how effective this product *[Cartrophen, pentosan polysulphate]* is, with the majority of athletes claiming 100% success rates. I first encountered its use with New Zealand and Australian rugby teams who were using it regularly to help them deal with the big injury factor in this game of crunch and tackle." Testosterone Mag. Dec-18-1998. [32]

Body builders - "There are a number of treatments that can be used for soft tissue damage such as arthritis. In particular the relatively new drug called Cartrophen Vet or pentosan *[pentosan polysulphate sodium]*. This drug is one of the most effective and it even has a very good success rate in 8 out of every 10 dogs! Yup, another veterinary drug has been employed by athletes."

"Though the drug pentosan is available in tablet form as well, my personal experiences have been that the use of the injectable form produces better results." *[Sept. 3, 2003]* [33]

Racehorses - In Stratford in late 1997, a friend Roger Lewis worked during November-December at the Stratford race track. I had bent Roger's ear many times about my research into this medicine, which was just beginning, but was not sure that he was really listening to my ramblings. But he was. One day he came dashing in after work exclaiming that he had seen pentosan being rubbed into the legs of a horse. Pentosan polysulphate was on the ointment label. When Roger asked if the compound is a liniment, he was told that it is much more than a liniment.

About a week later, following a race meeting at the track in early December, Roger again dashed in with another interesting account. A Vet had injected it into the legs of a race- horse. He had asked her if it was pentosan polysulphate and if it would be good for humans. She replied yes and added "but the law won't allow it." Why a horse would require this medicine before a race is strange. I didn't think an injured horse would be running. Sadly Roger who was a quiet genuine man, is no longer with us to confirm this story but from the moment he first saw pentosan in the swab room he kept his eye on activities there and reported back with gusto. It was fun and I never doubted Roger for a moment.

'Tales of the Turf' - In 2000 I came across a May-1999 article on the Sydney Morning Herald website 'Sport' section under Tales of the Turf by Max Presnell called 'It's a Gas for Horses and Stars.' Basically, this item was about the use of health and performance enhancing agents and other methods that are used by celebrities and/or applied to animals in the racing industry. I recall the mention of oxygen, but it was the following that grabbed my attention:

"Take for instance Cartrophen(r) *[pentosan polysulphate]* which is being billed as a hope for human arthritis sufferers. However, Cartrophen is being freely used on horses and dogs for various ailments with excellent results. And what makes it even better is that it doesn't produce a positive sample." [12]

Professionals - It is not surprising that pentosan polysulphate is used to treat elite athletes and racing and working animals. These professional participants do not benefit their owners or sponsors by hanging around for months nursing an injured body part. It is unfortuate that the same urgent consideration is not given to 'ordinary' people and animals.

Bark medicines - An enormous amount of medical research is being conducted to determine the benefits of bark. Anti-inflammatory comp-ounds found in the bark of Scottish pine and also New Zealand pinus radiata bark *[Enzogenol(r)]* are effective in fighting arthritis and potent anti-oxidants. Researchers also believe that the pine bark extract can potentially treat other health problems such as high blood pressure, asthma and heart disease. Quinine extracted from the root and trunk bark of the Cinchona, native to the South American Andes, is still the most effective remedy against malaria. In Europe, the willow bark extract is currently being prescribed to treat lower back pain. A popular anaesthetic, tubocurarine, contains extracts from bark. as do some cancer drugs and the main ingredient in aspirin, salicylic acid comes from the bark of poplar and willow trees.

Xylitol, the sugar/food form of 5-carbon pentose sugar, is produced from the xylose *[wood]* sugar in the bark of birch trees in Finland. Both beech and birch bark have a high yield of xylose sugar.

Harvesting bark - Bark is easily removed from live trees in long strips but the harvesting must be done with care because if the tree is completely stripped of its bark, it will die. To prevent this, bark is only harvested from trees that have not been stripped before, and usually less than a half round of it is removed. After a harvest, the tree is not used for bark again. [50]

New Zealand beech trees - "There are heaps of beech trees in New Zealand, why aren't we making this medicine?" is the first comment voiced by people when they learn where pentosan polysulphate comes from. Absolutely. If the National Cancer Institute in America manufac-tures it [72], probably for their research purposes, one would think an innovative New Zealand chemist/company would compound it for medical usage. It is free from patent laws and as trees are not felled in order to remove their bark, this makes it a sustainable resource. So it can-not be for fear of clear felling the beech forests that it is not made here.

CHAPTER V

XYLITOL
NUTRITIENT FORM OF PENTOSE SUGAR

Xylitol - An amazing discovery for health.
The unique sugar found in nature that kills harmful bacteria.

As well as being the medically active compound pentosan polysulphate, pentose sugar is also available as a granulated sugar. This natural sweetener which is called xylitol, looks and tastes like sugar *[sucrose]* but the similarities end there. Xylitol is produced mainly from the xylose sugar in birch bark. It is also made from rice and corn plant residue. Natural sources of xylitol are found in the fibres of pears, plums, strawberries, raspberries, rowan and other berries and fibrous vegetables, mushrooms, oats etc.

Xylitol is produced in the body. Endogenous xylitol *[within the body]* is produced in the liver. Xylitol production is a necessary stage of carbohydrate metabolism in mammals. In the human body 5-15 grams of xylitol is formed daily. Very little xylitol is excreted in the urine, probably due to the rapid spread of it *[diffusion]* from the blood to the tissues. The net xylitol utilization in humans is over 90% after moderate xylitol administration. [69]

Most of the xylitol that is taken into the body [exogenous] is metabolised in the liver, although other tissues like kidney, testes, adipose tissue *[fatty connective tissue]*, adrenal cortex, muscles and erythrocytes *[red blood cells]* are also able to metabolise it. The final metabolic products of xylitol in the liver are glucose and glycogen. [69]

Finding Xylitol

It is pertinent to this commentary that a chapter on xylitol is included because it is a branch of the same tree that is also unknown to most New Zealanders. When I made enquiries about this issue to the Ministry of Health their stance was, as with pentosan, one of total disregard. Considering xylitols many health benefits *[listed below]* for me this meant that our health authorities don't have a clue about this product.

While researching pentosan polysulphate it occurred to me that pentose sugar must surely be available in products bought over the counter. I made enquires at health shops. There were none. Then came a breakthrough. On the BBC website 10th October 2000, I saw an article titled "Sugar Spray Prevents Lung Infections." That's it! It had to be pentose sugar! I scrolled the page looking for the word, ignoring all else, until I came across the clue- "… the sugar, called xylitol, ...". I knew that another word for pentose/pentosan is xylose/xylan *[wood sugar]* and so the connection was immediate. I Googled the word xylitol and eureka!

"Xylitol is a 5-carbon pentose sugar manufactured from xylan hemicellulose sources such as birch bark, corn cobs/stalks, sugar bagasse and other agriculture biomass." Finally after four years I had found the nutrient, food form of this remarkable sugar.

Coming across xylitol raised many more questions and I now began searching for products such as 100% xylitol chewing gum and toothpaste. I phoned numerous health shops around the country. An Oamaru pharmacy stocked a German toothpaste Youtel which contained xylitol; a health-shop in Auckland sold one brand of children's toothpaste called Snappy Jaws; the C.E.O. of Health 2000+ had not heard of xylitol and it was not able to be purchased in New Zealand over the internet, though easily sourced this way from the USA, Asia and Europe.

Cystic Fibrosis

The BBC article began: "Cystic fibrosis sufferers prone to damaging infections may be able to fight them more effectively with a simple sugar inhaler." It continued: "The lungs have their own anti-bacterial action, produced by a liquid which overlays the cells lining the lung. In cystic fibrosis, this mechanism is far less effective, because the level of salt concentration in the airway surface-liquid is far too high."

"Xylitol lowers the salt concentration - enhancing the body's own bacteria-killing activity. In addition, bacteria cannot feed on xylitol, making it ideal for the purpose." The research was carried out at Iowa University, USA.

Dr Michael Welsh, from the Howard Hughes Medical Institute, said:
"The hope is that this could help prevent, or at least delay, the onset of infection in lungs of people with cystic fibrosis, and people who don't have cystic fibrosis but are prone to lung infections."

A spokesman for the Cystic Fibrosis Trust, a UK charity, said that anything that reduced the need for constant antibiotics and physiotherapy would be welcome. http://news.bbc.co.uk Oct. 10-2000

XYLITOL

Sugar shortage - enter xylitol: Xylitol has been known to organic chemistry since at least the 1890's. The first crystallization of xylitol took place during the second-world- war. Due to a sugar shortage engineers and chemists in Finland were forced to search for alternative sweeteners. [61]

Safety approval: The World Health Organization, the European Union, the FDA, and the Food and Agriculture Organization have declared xylitol a safe nutrient, as have Japan's health authorities and the Australian and New Zealand Food Standards Authority. [61]

Insulin-independent nature: Scientists did not realise the biological properties of xylitol until researchers began to exploit its insulin-independent nature after WW II. Frontrunners in these developments were Japan, Germany, and the Soviet Union. China and Italy also produced xylitol for domestic markets. Before 1970, xylitol was mainly used in these countries as a sweetener in the diabetic diet or in infusion therapy, which is the practice of feeding a person intravenously.[61]

This traditional use of xylitol is further proof of its metabolic safety. German and Japanese physicians especially, have with great success used xylitol, in combination with other carbohydrates and amino acids, for this purpose. [61]
Premature infants possess full capacity to metabolise xylitol. [61]

Sugar alcohols/polyols: Xylitol belongs to the poly-alcohols (polyols) which are not, strictly speaking, 'sugars'. However, the legitimacy for including polyols in the sugar field results from biochemical relationships; polyols are formed from, and can be converted to sugars, i.e. aldoses and ketoses. Some chemical encyclopaedias define sugars as crystalline, sweet carbohydrates. The sugar alcohols fall into this category. [61]

SIGNIFICANT HEALTH BENEFITS

Diabetes: Xylitol is not dependent on insulin to metabolise. It is a slow release sugar that does not raise blood sugar levels. Xylitol provides us with energy for cellular activity without having to rely on glucose or insulin. The first medical use of xylitol was for diabetes. In Japan xylitol has been used in the resuscitation of patients from diabetic coma. [61]

Low GI: The glycemic index *[GI]* of xylitol is 7. [78]

Low calorie count: Xylitol has the same sweetness as sugar *[sucrose]* but with 1/3rd fewer calories. Around 2.4 calories per gram. [79]

Prevents tooth decay:

Xylitol was clinically proven to prevent tooth decay in the 1973 Turku Sugar Studies carried out in Finland, led by Professor K. Makinen. Streptococci bacteria, the villain that produces the acids that rot teeth, cannot feed on 5- carbon pentose sugar. Because of this, streptococci cannot multiply and cause tooth decay and gum infections. Xylitol is the enemy of this and other harmful bacteria. The use of xylitol for dental purposes commenced in the 1970's. The first 100% xylitol chewing gum was launched in Finland followed by the USA in 1975. [61]

Streptococci bacteria are passed from mother to child through everyday contacts such as kissing and tasting of food. Studies have shown a dramatic 70% reduction in tooth decay among children whose mothers chewed xylitol gum 3-4 times a day. [73] Gel and syrup preparations of xylitol are available for use in babies and very young children.

Dental plaque that grows on 6-carbon glucose sugars is not able to form on xylitol because the molecule contains only a 5 carbon *[pentose]* atom. For the same reason, xylitol does not produce lactic acid. [61]

Inner ear infections: Clinical studies have shown substantial reductions in the occurrence of inner ear infection in children that regularly chew 100% xylitol sweetened gum. Bacteria that normally live in the back of the nose are the source of ear and sinus infections. These infections are also major triggers for asthma. Regular use in my practice of a nasal spray containing xylitol has prevented 93% of ear infections with comparable reductions in sinus infections, allergies, and asthma." Dr Lon Jones. [60]

Nasal bacteria: In a double-blind randomised crossover study, xylitol sprayed for 4 days into each nostril of normal volunteers significantly decreased the number of nasal bacteria Staphylococcus compared with saline control. [61]

Spray: The important element necessary in effective nasal spray is xylitol. It naturally repels bacteria before it has a chance to settle into the nasal tissue. **Chewing gum** releases xylitol into the mouth and throat preventing bacteria from moving up to the nasal passages and into the ear. [61]

Natural Anti-biotic

When harmful bacteria are exposed to xylitol *[specifically Strep pneumo* and H Flu*]*, they lose their ability to adhere to infected membranes and are not able to grow. Xylitol merely flushes harmful 'super' bacteria away. [60]

* **Streptococci pneumonia** is the leading bacterial cause of ear infections, sinus infections, bronchitis, and pneumonia.

* **Haemophilus influenzae** are common bacteria that cause a wide variety of infections in children. It occurs in the human respiratory track and causes acute respiratory infections, acute conjunctivitis and meningitis. Type 'b' is the most common form of this bacterium.

Xylitol Kills Virulent Bacterium

The University of Iowa researchers have also determined that xylitol enhances the rapid killing of *[bacterium]* PA103. This bacterium is a virulent and highly opportunistic pathogen that causes serious and often fatal infectious diseases. They concluded xylitol offers promising possibilities for therapeutic intervention in cases of bacterial infection and pneumonia.

PA103 *[pseudomonas aeruginosa]* bacterium is notorious for its resistance to antibiotics and is, therefore, a particularly dangerous and dreaded pathogen.

PA103 bacterium infections: Central nervous system infections, meningitis and brain abscesses; urinary tract and inner ear infections; respiratory infections including pneumonia/chronic lung infections; endocarditis *[infection in heart tissue/valves]*; dermatitis, soft tissue infections; bacteremia *[sepsis/blood infections]*, bone and joint infections; gastrointestinal infections and a variety of systemic infections, particularly in patients with severe burns and in cancer and AIDS patients who are immune-suppressed. It can cause devastating infections in the human eye. [63]

This bacterial infection is a serious problem in patients hospitalised with cancer, cystic fibrosis, and burns. [64]

Inhaled Xylitol well tolerated: In 2004 researchers at the University of Iowa also determined that the inhalation of aerosolized iso-osmotic xylitol was well tolerated by naïve and atopic mice, and by healthy human volunteers. [74]

Sports nutrition: Between exercise sessions it is desirable to maintain steady blood sugar and insulin levels. Xylitol is a useful between meal treat, to maintain a steady trickle of energy. Unabsorbed Xylitol acts like dietary fibre, helping to maintain healthy gut function.

An important added bonus of Xylitol metabolism is the activation of the antioxidant system which helps to squelch free radicals generated by heavy exercise, thereby reducing oxidative damage to muscle and blood cells. [61]

"All of these properties make xylitol an excellent addition to our line of supplement drinks, powders and sports bars; nutritional formulations designed for helping you lose body fat while at the same time maintaining or even increasing skeletal muscle mass." [59]

Steroid alternative: Strength athletes *[footballers, bodybuilders]* searching for alternatives to steroids are particularly intrigued by Xylitol. Even thin runners want to avoid the 'emaciated' look caused by upper body protein being burned for fuel. Developing lean muscle mass involves increasing muscle build up *[anabolism]* while minimizing the breakdown *[catabolism]* of muscle protein. It is well documented that Xylitol has these effects in conditions of stress and trauma. [61]

Aids body-fat loss: Xylitol has the same calories as glucose, but it affects the metabolism in different ways that have benefits for those wanting to lose weight and body fat. Xylitol helps maintain lean muscle mass while at the same time maintaining or even increasing skeletal muscle mass.[59]

Special diets: Xylitol has been used in foods since the 1960's and is approved in the U.S. as a food additive in unlimited quantity for foods qwith special dietary purposes and is safe for use by those with hypoglycemia. Xylitol is used as a source of energy in intravenous nutrition, because tissues can use xylitol under post-operative and post-traumatic conditions, when considerable insulin resistance prevents the effective utilization of glucose. [61]

Yeast infections: Xylitol has been shown to be effective in inhibiting Candida a serious systemic yeast problem. As yeast cannot metabolise xylitol, doctors inclined toward natural treatments have recommended the use of xylitol to prevent yeast infections for this reason. [60]

New physiological choice for preventing osteoporosis:
Research findings:
1. Dietary xylitol increases bone calcium and phosphorous concentrationsin healthy rats. It also protects against the loss of bone minerals and bone density during experimental osteoporosis.
2. Continuous dietary xylitol was effective in protecting against changes in bone structure and the weakening of bone biomechanical properties in aged rats and those that have had their ovaries removed.

The researchers concluded that oral xylitol seems to provide interesting possibilities in the search for new physiological choices for the prevention of osteoporosis. *[Pauli Mattila; Dr M. Svanberg, Ph.D. et al, Finland.]* [62]

[Considering that Arthropharm has a patent for a treatment against osteoporosis using pentosan polysulphate, [P22,4] the suggestion that regular use of xylitol [pentose sugar] in the diet could prevent thisdisease makes absolute sense.]

Xylitol dosage examples: Xylitol can cause diarrhoea initially if more than 5 gm, about 1 teaspoon, is taken at one time. With continued use the body soon adjusts to the xylitol. People involved in the Turku Sugar Studies in Finland ate an average of 57gm a day, about 1/4 cup, without any ill effects. [61]

Xylitol is available in some countries in IV solutions in diabetics and in some critical care situations such as burns. In papers prepared for the FDA, the safe IV dose is 0.5 gms per kilogram per hour. For a 183 pound person, this is the equivalent of eating about 2000 plums a day. [60]

Xylitol in cooking: Xylitol is a very attractive 'white' sugar/sucrose alternative for cooking and to sweeten drinks. Yeast though cannot metabolise it so do not use it in bread making or other yeast recipes. Xylitol also does not crystallise as much as sugar so it is not recommended in making peanut brittle. [60]

Xylitol use endorsed, promoted world wide
Xylitol is recommended by Dentists, Medical Doctors, Periodontists, Paediatricians and many health organizations and health professionals worldwide. The use of products containing high levels of xylitol is officially endorsed by the Dental Association's of Finland, Norway, Sweden, England, Ireland, Estonia and the Netherlands. [61]

Xylitol not endorsed/promoted by health authorities in New Zealand
Xylitol has been approved safe by the Australia NZ Food Standards Authority but has not been promoted here by the Ministry of Health and 100% xylitol gum, mints, chocolates, toothpaste, mouth spray, syrup, nasal spray etc, are virtually unheard of in New Zealand.

American Military - Xylitol first campaign
The US Army "Look for Xylitol First" campaign focuses on teaching soldiers to be educated consumers and look for xylitol as the first ingredient in sugar free products - in order to guarantee an effective level of xylitol. Recommendation of products containing appropriate levels of xylitol for service personnel has been the practice of preventive dentists in all branches of the US Armed Forces for several years. [65]

Correspondence

The Minister of Health received my first enquiry about why the public was not receiving xylitol education, in January 2001. Annette King was complaining about the extremely high cost of water fluoridation. Director General of Health, Karen Poutasi replied- "Xylitol is recognised as having very low potential to cause caries, but the evidence is not as clear-cut as it is for fluoride." "However xylitol is not a replacement for sucrose (sugar) because it doesn't have the same properties, other than sweetness". *[The Director General of Health would benefit from xylitol education]*

The New Zealand Dental Association, May 2002
"The New Zealand Dental Association has not endorsed any xylitol based dental or oral hygiene products because they have not been products submitted for the current NZDA Approved system." *[NZ dentists do not educate the public about xylitol's ability to prevent tooth decay, but continue to lambast us for the high incidence of it]*

Cystic Fibrosis Association, July 2002
"A doctor contacted said that this (xylitol) research is indeed in the early stages, and is in a very controversial area anyway, that the mechanism of salt exchange in the CF lung is yet to be elucidated, and that there is no scientific basis for thinking that a xylitol spray would make any difference." *[The Iowa researchers did not merely "think" it would make a difference; their findings are based on observed scientific principles.]*

Diabetes New Zealand, June 2002
"Our nutrition policy is the same as for Diabetes UK and the American Diabetes Assn. - people with diabetes do not need to use special products, but should be choosing products

which are less than 10% fat and less than 10% sugar." *[Extremely low GI of 7, insulin independent and yet diabetics in NZ are not told about xylitol by the organisation that represents them]*

Jim Mann, Professor of Nutrition Otago University
I wrote to Professor Mann in September 2002 and asked why xylitol which has an extremely low Glycemic Index of 7 and is insulin independent is not promoted for use by diabetics in New Zealand. His reply *[Sept 24]* which did not address the question said "Xylitol is one of several compounds of its type that has never been shown to have any advantages over sugar in the long term", adding that it can cause diarrhoea *[for goodness sake, so can curry]* and "to the best of my knowledge there are few countries other than France where it is used to any appreciable extent." *[Prof. Mann is a world expert on human nutrition for heart disease and diabetes, however his limited knowledge and disregard of xylitol's benefits is out of step with xylitol research]*

1,500 Papers

It would seem that our health officials and medical professionals have been in a 30-year slumber, because during this time over 1,500 research papers on xylitol have been published.

Professor Kauko Makinen Director, Institute of Preventative Dentistry, University of Turku, Finland. Leader of the 1973 Turku Sugar Studies -"Further delays in implementing xylitol caries prevention programmes can no longer be justified."

Dr. Catherine Hayes of Harvard School of Dental Medicine agrees. "Since the evidence suggests a strong caries protective effect for Xylitol, it would be unethical to deprive subjects of its potential benefits." [75]

Dr Theresa Madden senior lecturer at Otago University School of Dentistry, in August 2006, gave the public only one reason for chewing sugar-free xylitol gum - to stimulate saliva. (www.scoop.co.nz)

Unconscionable not to educate public. That individuals in the health and medical sectors have decided for the New Zealand public that they do not need to know about xylitol and it's amazing health benefits, is quite frankly an extremely arrogant and irresponsible decision to make.

Xylitol in T-Shirts, 'Stay Cool in the Summer Heat' 'The company *[Asics Corp. Japan]* also markets four other varieties of anti UV women's t-shirts, including one containing xylitol which, with its heat absorbing properties, helps keep the wearer cool.' (Aug '03] [65]

Purchase Xylitol in New Zealand. 100% xylitol granules, sweets and gum can now be purchased in New Zealand from Annies of Marlborough, in Blenheim, www.annies.co.nz and Xylitol Products Ltd. in Whangarei, www.xylihealth.co.nz

Further reading on Xylitol. The internet provides the many articles, research studies, and references which are available on the health merits of xylitol consumption, as well as the large array of global on-line retail outlets.

CHAPTER VI

CORRESPONDENCE WITH THE AUTHORITIES

Original inoculators were altruists.
Dennis Wright, Oamaru

The long, winding pot-holed road to pentosan polysulphate.

Rheumatologists

In January 1997 I began corresponding with Dunedin rheumatologist Dr John Highton. I asked about pentosan to treat rheumatoid arthritis. He replied saying there was considerable interest in its use, particularly for osteoarthritis and included an article by two researchers *[Rasaratnam, Ryan]* at Monash University in Melbourne called 'Viscosupplementation in Osteoarthritis.' One of the agents used in their trial was pentosan polysulphate.

Their comment pentosan polysulphate "a polysulphated polysaccharide prepared from beech hemi-cellulose has the advantage of lacking antigenic protein constituents and is a potent inhibitor of matrix metalloproteinases and leucocyte elastases" caught my attention. I correctly deciphered this to be: **pentosan is a sulphated sugar prepared from beech bark with a safety advantage over other agents because it is free of contaminants and which very effectively prevents the development of the degrading enzymes that cause arthritis.**

I considered these facts and wondered why this medicine is not a treatment option for arthritis sufferers in New Zealand, but is used here by veterinarians to treat animals with the same condition. I knew from experience that cortisone and anti-inflammatory drugs (NSAID's) which are the common treatment in New Zealand for all forms of arthritis, have many toxic effects and merely give a feeling of well-being for a while, but do not get rid of this very debilitating and constantly painful disease. Against this inferior safety and efficacy profile pentosan polysulphate and visco-supplementation stood out as being rational treatments. Over the following years I hounded Highton about this issue and wrote to other rheumatologists and the Ministry of Health presenting the same question: "Why are pentosan polysulphate and visco-supplementation not treatment options in New Zealand?"

Excerpts from this correspondence follow:

* "Pentosan polysulphate Cartrophen(r) is certainly an interesting compound. There is considerable interest in its potential for use particularly in the treatment of osteoarthritis." 30 January 1997 We are still waiting.

* "I guess the fact that it is available for veterinary usage reflects how much easier it is to get agents approved for veterinary use in animals rather than human use." *[This is pure spin. Pentosan polysulphate has been a human medicine for over 45 years; research in*

arthritis at least since 1982. Its use in animals is very recent].

* "Thankyou for your further letter about viscosupplementation. Unfortunately the simple fact of the matter is these agents are not available for human use in New Zealand. It is certainly not a matter of rejecting such a treatment. I am confident that I would know if these agents had become newly available in NZ or Australia because their use would be adopted enthusiastically by Rheumatologists who would like nothing better than to have a potentially disease modifying treatment for osteoarthritis." Prof. J.Highton 1997
[Try pentosan professor; it doesn'tjust modify arthritis, it gets rid of it. Nine years after his comment pentosan and viscosupplementation are not generally used in New Zea-land. Selectively or in private practise, I do not know.]

* "There are some agents that are used more extensively in some non-Commonwealth and non-United States areas but that in itself is not necessarily proof of ethicacy."1997 Dr Terry Macedo Rheumatoogist*[Pentosan polysulphate was proven to be an ethical medicine over 5decades ago.]* [29]

* "I have no experience with this form of treatment and am not aware of its availability in New Zealand. We have no plans here at QE II Hospital to introduce it, nor to establish any research programme that you might take part in." 1997. *[Well, get some experience Dr Petrie! came to mind upon reading the hidebound reply from this senior rheumatologist.]*

Enquiry to Arthropharm

In March 1997 Dr Highton wrote to Arthropharm asking about Cartrophen for human use. Chairman Dr David Cullis-Hill's reply on March 27th was brief: "Thankyou for your enquiry about a Cartrophen preparation suitable for human use. At this stage there is no such preparation." [8]

Cartrophen is one of numerous registered trading names for the medically active substance, sodium pentosan polysulphate that was first compounded in 1947 by Wilhelm Benend for human usage. By implying that there is only a preparation of sodium pentosan polysulphate *[Cartrophen]* for use in animals Dr Cullis-Hill was not honest in his reply.

Arthropharm refuse to supply

My GP had tried to source pentosan directly from Arthropharm in Sydney. Manager Dr Hannon said yes, it could be supplied but the chairman Dr David Cullis-Hill over rode his decision saying that as I had rheumatoid he could not suggest a dose schedule for this particular form of arthritis.[80] But his Arthropharm patent application for pentosan totreat arthritis,[9] clearly suggests that it would be useful for treating both osteo and rheumatoid and so a dose schedule must be known.

The refusal to sell a medicine is a most unusual decision for the C.E.O. of a pharmaceutical company to make. Ultimately the decision to use a medicine is the domain of doctors of medicine in consultation with their patients. Doctors know precisely how to determine the dosage of medicines, on or off-label. I wondered if Dr Cullis-Hill takes a personal interest in every potential pentosan poysulphate purchase.

Dr Cullis-Hill will know that pentosan polysulphate is not indicated for CJD either and that there was no known dose schedule for direct infusion of it into the human brain when Dame Elizabeth ruled for Johnny Simms to become the first person in the world to have it administered this way. He will know also that this medicine, which is provided by their senior partner in Munich (19) is still being used to treat Johnny Simms and other CJD patients today and that the first ever dose schedule for such usage was determined solely on the professional discretion of Johnny's neurosurgeon. The C.E.O. of bene-Arzneimittel did not decline to supply pentosan because there was no dose schedule for CJD.

Italian source in February 2001

I eventually sourced pentosan polysulphate *[Fibrase]* from Italy. My cousin bought the ampoules over the counter at a pharmacy in the old country and couriered them to my GP in New Zealand. *[Sect. 25 Med Act]*. During 2001-3, I received numerous IM injections and did not experience one adverse effect. Au contraire, pentosan safely took-out whatever had been wrecking my joints. Unfortunately after 30 years the disease had caused joint damage too advanced to repair.

Electric is the best word to describe the surge of energy I felt immediately after the first injection of pentosan. The negative sulphate groups enable high concentrations of pentosan to reach the extra-cellular matrix. As a result, the immediate recharging of the cells powerhouses which were boosting dormant cellular activity, was evident. I slept for most of the following two days. The body's fight to kill the arthritis disease had begun. And the newly found energy did not diminish before the next injection *[1 weekly for 4 weeks]*, it is there to stay. For me, pentosan polysulphate repairing, healing and energising the body was a supremely magnificent sensation.

During the treatment period, I asked my doctor a very pertinent question: "If pentosan polysulphate was given at the onset of arthritis, would people not end up like me?" His reply, which has been echoed by those close to Johnny's CJD case, said it all "The sooner it is given the more benefit."

2001

I informed John Highton [now Asst Professor] in October 2001 that I had sourced pentosan from Italy for my GP, that I had received weekly IM injections and that subsequent blood tests had shown the rheumatoid factor to be normal. His reply expressed a vague interest in my result on pentosan and he suggested I look at Glucosamine "another sugar" because it had featured more in recent arthritis medical literature than pentosan.

I replied once more to Professor Highton, who was at the time the President of the NZ Rheumatology Association suggesting that whatever their current treatment rationale is, it is far from rational because rheumatologists are choosing drugs that do not get rid of the disease and which cause serious side effects, while completely ignoring the safe and effective medicine pentosan polysulphate.

I also suggested he read the paper published two years earlier *['99]* by Australian world expert Professor Peter Ghosh on the rationale for using pentosan to treat osteoarthritis. This paper along with many others on the subject *[at least back to '82]* testifies that there is plenty of data estab-lishing the safety and effectiveness of pentosan polysulphate to treat arthritis in humans. The Arthropharm 1992 US patent confirms this.

I appreciated that Professor Highton took the time to correspond with me over five years on this very important subject. But my closing comment to him in November 2001, is what I firmly believe:

"It is my belief that if rheumatologists developed the symptoms of arthritis they would treat themselves with pentosan polysulphate, because none of you would want to end up like your patients."

Arthritis New Zealand

I also put the question about pentosan and visco-supplementation to the NZ Arthritis Foundation in October 1997. Their reply said: "In response to your question about visco-supplementation being unavailable in New Zealand I can only repeat that proven clinical trials have not yet been completed. Until they are and medical specialists feel the treatment is safe and effective they will not use it."

Four years later in October 2001 I wrote a third time outlining my success with pentosan to treat rheumatoid arthritis. CEO at the time, Alasdair Finnie replied: "Thankyou very much for your letter of the 12 Oct.2001 concerning pentosan polysulphate. I was delighted to read of your recovery from rheumatoid arthritis using this medication."

[Arthritis New Zealand do not inform people with arthritic diseases about this medicine and visco-supplementation treatment.]

NEW ZEALAND MINISTRY OF HEALTH

I also wrote to the Ministry of Health's Medicines Evaluation dept. asking if pentosan polysulphate is registered for human use in NZ. Rob Allman the head of the Evaluation Team replied- 'The decision tomarket a medicine is a commercial decision made by the sponsor of the product in New Zealand and as yet, no applications have been received from any manufacturer for consent to distribute medicines containing pentosan polysulphate as an ingredient. I can confirm that Medsafe has no knowledge of product called Elmiron or any other medicine that contains pentosan polysulphate.'

My response to Rob Allman was brief:
Elmiron the capsule dosage of pentosan polysulphate is on the Medsafe Sect 29 list of unapproved medicines, 4 April 2000. Today *[5-11-2001]* Canterbury Health confirmed that Elmiron *[for bladder infection]* is available under Section 29 the Medicines Act. *[Canterbury Health dispenses Elmiron. 4-Jan-2007]*

I have highlighted my reply to Allman because his correspondence speaks volumes about the state of our health bureaucracy. Chaotic comes to mind. Medsafe's leader of the team which evaluates medicines for market approval, confirmed that Medsafe did not know that their Section 29 list of unapproved medicines has pentosan polysulphate [Elmiron(r)] on it. QFurther, Medsafe have no knowledge of Elmiron or any medicine containing pentosan polysulphate.

Health Minister Annette King

During the TV One debates prior to the 1999 elections Annette King said she knew all about arthritis because her mother has rheumatoid. When she became Health Minister I wrote to her about pentosan for the treatment of arthritis. Her reply follows:

'Thank you for your letter 15 October 2001 about pentosan polysulphate, which you recommended as a treatment for arthritis. When a manufacturer wishes to market a medicine in New Zealand, the manufacturer must have approval from Medsafe before marketing the medicine. In order to receive this approval the manufacturer needs to supply evidence of the safety and efficacy of the medicine. As Mr Allman's reply states, no applications have yet been made by any manufacturer to distribute these medicines in New Zealand.' Annette King, Minister of Health. 20-11-2001

The Medicines Act 1981

'The Medicines Act regulates the use of medicines in New Zealand. It requires that in order for a medicine to be marketed an application with supporting documentation must be made for the consent of the Minister. Because of this requirement for seeking and obtaining consent, it follows that there will be medicines that may be effective and safe, and approved in other countries, but do not have approval in New Zealand. There will also be other medicines that have been approved with a particular set of indications, but for which there are other recognised indications not applied for in New Zealand. Some unapproved medicines may be used for rare diseases, for which there are few or no treatments approved in this country.'

Approved and unapproved medicines:

Permit to Import

'Section 25 The Medicines Act permits practitioners including dentists and midwives to "procure the sale or supply of any medicine" for a particular patient in his or her care. "Any medicine" includes approved and unapproved medicines. "Procure the sale or supply" refers to obtaining the medicine through the usual channels such as a pharmacy or a pharmaceutical company, and it also permits the practitioner to use other means of obtaining a medicine such as importation. The use is to be for the treatment of a particular patient in the care of that or another practitioner. They are not required to inform the Director General of Health.'

Supplied within New Zealand

'Section 29 of the Medicines Act permits doctors of medicine to access unapproved medicines from suppliers located within New Zealand. This allows a medical practitioner to source unapproved medicines for use in a named patient. The supplier is required to notify the Director General of health of the name of the medicine, medical practitioner and patient, and date and place of supply. Section 29 list of unapproved medicines is intended to assist medical practitioners and pharmacists in sourcing unapproved medicines.'

'The Medicines Act puts no restriction on the use of a medicine, even in a situation in which it is contra-indicated.'

[NB: Medications under these sections are not subsidised by Pharmac. A full account of the Medicines Act Sections 25 and 29 can be found on the Medsafe website. www.medsafe.govt.nz]

Commerce first priority for drug companies

'For the last 50 years we have operated on the assumption that drugs equals the pharmaceutical industry equals profit and until recently there has been no other paradigm. Now it's suddenly dawned on us that there are societal needs that cannot be met by the commercially driven pharmaceutical industry.'

'The Holy Grail for pharmaceutical companies is to have as many blockbuster drugs (with annual sales of more than US$1 billion) in their portfolio as possible. To be honest, inside Big Pharma people know that the supposed benchmark of US$ 500 million for peak sales is not even interesting.' [43]

No intention of providing cures

'The most commercially interesting drugs are either first in class (allowing them to capture the market) or best in class. They are also the drugs that are required to keep the symptoms under control, rather than preventing or curing the disease.' Nov. 2005 [43]

HOW TO SOURCE PENTOSAN

The good news though is, doctors [and dentists and mid-wives] can import/source pentosan polysulphate. The cost in New Zealand for a 4 injection course *[Cartrophen]* for animals with arthritis is around $120.00. Ampoules *[Fibrase]* bought over the counter in Italian pharmacies are US$32.00 for a box of ten.

Over the counter preparations

Pentosan polysulphate injections, gels, creams and ointments can be purchased over the counter in European countries. They are inexpensive. Brands include Fibrase *[Italy]*; Thrombocid, Fibrezym, Tavan SP-54 *[Germany]*; Hemoclar *[France]*; Fibrocid *[Spain]*; Polyanion *[Austria]*.

Thrombocid a topical gel used to treat bruising, sports injuries, joint pain, is a particularly innovative product. Pentosan polysulphate is blended with the oils of rosemary and melissa *[lemon balm].* It is approximately NZ$26.00 for a 100gm tube.

Despite our Ministry of Health having no knowledge of pentosan polysulphate capsules [Elmiron] for bladder infection, they are available *[Sect. 29]* from Canterbury Health and injections, gels, creams and ointments of the brands listed can be sourced by medical practitioners from their usual international suppliers under Sect. 25.

New Zealand Medical Association

I clarified the use specifically of pentosan polysulphate injections with the New Zealand Medical Association in June 2004. They '**have no policy on how doctors handle injections**' and in regard to pentosan '**it is a clinical matter.**' And as the Medicines Act puts no restriction on the use of a medicine, even in a situation in which it is contra-indicated, and Section 25 permits doctors to import medicines not registered in NewZealand, it is quite clear that doctors are free to source and use pentosan polysulphate.

The remarkable PHARMACOLOGY *[modes of action]* (P50) of pentosan polysulphate speaks for it. If your doctor refuses to use it, find one who will. Sourcing this medicine is not an ordeal for doctors.

THE MEDIA

During the many years that I researched pentosan polysulphate and beyond, I took advantage of the Otago Daily Times Editorial page to question the Ministry of Health about the medicine and also about xylitol. This ensured a transparent and public correspondence. From my first letter to this bastion of principles, which related to pentosan for cancer, Editor Robin Charteris and his team published all letters. This allowed me to 'take a swipe' at the usual reply-spin that officials and so called experts are renowned for.

My attempts to raise the curiosity of John Shaw producer of the TV One Sunday programme failed. In early August 2003, I put the Holmes programme in touch with Don Simms in Belfast, Northern Ireland when it was feared that a young Waikato farm worker may have developed vCJD. This completely unknown medicine was now receiving international media headlines due to Dons son Johnny. I made a mention in my fax to the producer Briar McCormack, that I had received pentosan polysulphate to successfully treat rheumatoid arthritis, in case they wanted to do an item on the medicine. Dr Dealler also emailed her, leaving his contact details and said if they wanted to elaborate further on the medicine, have a talk with Linda, the New Zealand expert on pentosan polysulphate.

Don had done no TV interviews to countries outside the UK, so agreeing to appear on Holmes was unique to the host and his New Zealand viewers. However the opportunity for this story to be expanded on for public interest was not taken by this team of investigative journalists.

An Australian 60 Minutes interview with Don and Karen Simms taken at their home *[late 2003]* was aired on TV3 in May 2004. Ever the opportunist I decided to send a synopsis of my experience with pentosan polysulphate for arthritis, my connection with the Simms family, Steve qDealler etc, to the New Zealand 60 Minute team at TV3….. no response.

If the Australian or New Zealand 60 Minutes teams had been slightly curious about the mystery medicine pentosan polysuphate, they would have easily found that two of the worlds leading researchers in this medicine, and their company Arthropharm Ltd. are based right on their doorstep in Sydney, at Bondi Junction.

The BBC has a pentosan polysulphate question/answer page on the net but this merely scratches the surface of the subject.

Three months after Johnny's treatment of pentosan intra-cerebral infusions began, the New York Times Magazine, May 11th 2003 edition [54] ran an article by Lisa Belkin, which backgrounds the nightmarish battle the Simms family went through at the hands of clinician's, scientist's and officialdom and of Jonathan's progress on pentosan polysulphate. It had the enquiring title "Why is Jonathan Simms Still Alive?" The article though very informative did not answer this question.

Investigative journalists lack commitment and curiosity

In 4 weeks time it will be five years since Johnny's treatment began (Feb-13-03) and over 6 since he was diagnosed with vCJD. Against all odds Johnny has survived the disease and longer than any other person struck down with it. Why aren't the media now putting that question "Why is Jonathan Simms Still alive?" to the scientists whose professional opinion as to why to not use pentosan, was defied by Johnny's survival?

It is a mystery that no investigative journalist has taken a closer look at the medicine which saved the life of a young man in the final stages of the hideous and fatal disease nvCJD. Not withstanding Johnny's truly amazing though shameful story, exposing the many startling and currently hidden facts about pentosan polysulphate is a major story in its own right. Johnny's pioneering treatment could have far reaching consequences for other similar disease states.

Why has this phenomenal story not prompted even one of them to investigate the reason why Johnny is indeed still alive ?

" The sick man, being more aware of what he lacks
than the healthy man of what he possesses,
is better qualified to write about health." [46]

Friedrich W. Nietzsche (1844 - 1900)

CHAPTER VII

RHEUMATOID ARTHRITIS, CONVENTIONAL DRUGS,

DR STEPHEN DEALLER AND DON SIMMS

Rheumatoid arthritis

I always ran. As a child I ran everywhere, indoors as well as out. I was wired to move fast. To play sport and to dance was a way of life. A person who is born with this instinct never imagines that their natural state of being could be taken away in an instant, it never enters the mind. But when one is disabled permanently it is undeniably devastating. This will apply to anyone who is struck down with a permanent disability regardless of the impairment. Of course one adapts to no longer being able-bodied and in many instances not being able to move at all, but a deep sense of loss remains. [A surgeon would experience this if he lost the use of a hand]. In times past, disabilities were in the main caused by accidents, but for some time now people are being taken-out in ever increasing numbers by a raft of very debilitating degenerative and other serious diseases.

Cortisone

I was 26 when my disabilities began in April 1974 as the transitory effects of cortisone injections wore off. In October 1973 in Sydney, Dr Andrews [Balmain Hospital] prescribed this drug to treat water on the knees which had developed after I stumbled while skipping down stairs. Overnight the knees seemed healed but six months later, over one week, my right arm and both knees became permanently bent. In Dunedin two months later, Professor Highton senior's diagnosis was rheumatoid arthritis. I always challenged medical experts about the role the cortisone played in what became a seriously permanent disability effecting multiple joints. In 2000 while talking about this with Bruce an American anaesthesiologist/ holistic MD in Washington DC, when I mentioned my symptoms and that I had been given no withdrawal-treatment *[official protocol in regard to this drug]* he said I had suffered acute withdrawals from the cortisone injections. Bruce had confirmed my suspicion about the treatment. Cortisone caused the disease and I will never be convinced otherwise.

Precautions for corticosteroids - 1982

'Unless considered life-saving systemic corticosteroids are contraindicated *[inadvisable]* in patients with peptic ulcer, osteoporosis, psychoses or severe psycho-neuroses, and they should be used only with great caution in the presence of congestive heart failure, in patients with diabetes mellitus, infectious diseases, chronic renal failure and uraemia, TB, and in elderly persons.' The Martindale Pharmacopoeia, 1982. Corticosteroids, p. 449.

Use long over - 1978

'The vogue of systemic corticosteroids in rheumatoid arthritis is long over. Even in low doses their long-term side effects out weigh their temporary benefit, which long term trials show to be lost after the first year, following which corticosteroid treated patients do worse.

I do use them for two groups: Wage earners about to lose their job and housewives unable to cope, until gold or penicillamine take effect; and patients in whom all else has failed and whose quality of life is poor.' [77]

Toxicity ignored

Regardless of cortisones toxicity doctors continue to drench their patients with it. It is very commonly known by medical professionals that corticosteroid drugs break down cartilage, inhibit secretion of the pituitary hormones, cause growth retardation in children, inhaled it blocks the air passages, they cause cataracts, thin the skin and bones *[osteoporosis]*, raise the risk of infections, ETC, the list seems endless! [50]

NSAID's

After trying a few non-steroidal anti-inflammatory drugs I quickly realised that they are completely useless and dangerous. I turned instead to natural regimes that although not halting the disease, in conjunction with an all natural food diet *[including gallons of extra-virgin olive oil]* definitely slowed its progress and ensured that I have maintained excellent health.

As well as perforating the stomach lining and causing ulcers, it was revealed on September 30th 2004, by an FDA 'whistleblower', that Vioxx and other anti-inflammatory drugs cause fatal heart attacks and strokes. Manufacturers of these very common prescribed and over the counter drugs had failed to reveal this information when applying for FDA approval. Vioxx was immediately removed from the global market. Other NSAID's implicated include Voltaren, Ibuprophen, Narposyn and Celebrex.

New drugs under the microscope

Professor John Highton had also mentioned that new drugs in the pipeline for rheumatoid arthritis in particular *[now available]*, included Leflumonide and Anti-TNF's *[anti-tumour necrosis factor agents]*. But it turns out that their safety profiles are also far from acceptable.

New Zealand Medsafe Alert: Serious Multi-System Adverse Effects

Rheumatoid arthritis drug Leflunomide has been associated withsignificant and serious adverse reactions involving blood, liver, immune, dermatological and respiratory systems. [38]

Anti-TNF drugs

The most significant side effect of these medications *[Enbrel, Humira, Remicade]* is an increased risk of all types of infections, including tuberculosis (TB).[39] Tumour necrosis factor *[TNF]* inhibitors have been linked with a variety of infections in some patients; of most concern from a public heath perspective is the development of active tuberculosis.[41]

NB: Pentosan polysulphate is a TNF *[tumour-necrosis factor]* inhibitor. *[Pharmacology 3]* No mention of serious risk

In the April 2004 edition of the NZ Medical Journal Prof. John Highton wrote that Anti-TNF agents are very effective interventions for joint destruction in their patients with rheumatoid arthritis and offer new treatment options for patients with more severe psoriatic arthritis, and ankylosing spondylitis. He said these agents improve well being, reduce joint destruction, and reduce the mortality associated with diseases such as RA. [40]

[Professor Highton did not mention that Anti-TNF drugs raise the risk of developing serious infections, especially TB. Do rheumatologists and GP's inform their patients about this serious possibility?]

Methotrexate? ...not likely!

I spent a rare stay in hospital for two days in Taranaki Base in early November 1997. I had a visit by Dr Barr who was accompanied on his only and very brief visit by another medical staff member and two medical students. I sat on the bed, crippled limbs exposed while Dr Barr perched on the side. He said "Have you tried methotrexate?" I answered that I had not and before I considered its use would want to read the adverse effects because like cortisone it probably has many. Dr Barr said "And what are they?" I said "Well, just take a look at me!" Barr, in a state of shock or was it indignation, stood without a word and walked out. I hoped the two future doctors whom he left standing there, would learn from his appalling attitude how not to treat patients.

Dr Stephen Dealler

In December 1999 a friend printed some pentosan information off the Internet for me. It was a revelation. I learnt that this medicine had been used for over 40 years in Europe to treat a multitude of health disorders, I discovered Dr Steve Dealler and realised I should definitely buy acomputer. In 1998 Dr Dealler had advised the UK government to use pentosan for nvCJD patients and from his website it was obvious that he is an expert on this sulphated sugar. I phoned Steve Dealler on January 4th 2000. I said I was trying to source pentosan for arthritis and was experiencing the same blinkered response from our medical establishment that he had come up against. He encouraged me to buy a computer for both email and knowledge and with a further nudge from Bruce who was at the time in practice in Bethesda Maryland, and my very supportive brother Alan in San Francisco, I did. I quickly realized that the internet is not merely a fountain of knowledge, it is a volcano.

Steve Dealler was an absolute brick. He always encouraged me not to give up trying to source pentosan. I emailed regular updates of my pentosan research to Steve, including my attitude towards the authorities that are keeping pentosan off the general medicine menu - globally. When my work, which became a treatise on pentose sugar was completed I posted a copy to him. Steve gave my lay enquiry the thumbs up and advised me to put the work onto the net. My friendship with Steve and Jan and the star of the family their golden retriever Jessie, continues to this day.

Don and Karen Simms

Steve put me in touch with Don and Karen Simms in Belfast in late October 2002. They were having a serious battle with the UK authorities to get pentosan polysulphate to treat their eldest child Johnny who was then 18 and experiencing the terrible, final stages of vCJD. Steve asked me to encourage them to keep going. I phoned the Simms immediately. They were thrilled to get my call of support out of the blue. Johnny's very loving and passionate parents took on the might and power of the medical establishment for him and won. The regular emails and phone calls which passed between Don and I prior to and after his harrowing court case in early December that year, sharing their joy of success and their tense wait until Johnny was first treated in early February 2003, are treasured and very privileged memories. Our friendship also continues today.

CHAPTER VIII

PENTOSAN POLYSULPHATE
A MEDICINE FORGOTTEN OR BURIED?

Toxic legacy

We are living in a horridly toxic Age, a legacy particularly of certain branches of 20th century science and technology. Because of this disconcerting fact, the odds are stacked heavily in favour of us becoming seriously ill during our lifetime. The potential toxicity of dioxins began to be recognised 40 years ago and in sensibly governed countries their use and that of other such chemicals, has been banned. In New Zealand though, it is common for government scientists and health officials to deny that the chemicals which are poisoning the air, soil, rivers and oceans and our food, cause cancer, motor-neuron, reproductive and other serious health disorders and death. In fact, the NZ Ministry of Health seems to be trying to convince us that we are a special species of human that cannot be harmed in any way by poisonous substances.

Immune system

The immune system is a constellation of defence cells to be marvelled at. Throughout our lives these cells strive to engulf and destroy invading pathogens and repair the damage which is inflicted on our health by the many poisonous chemicals which now saturate the air, the environment and almost everything we drink, eat and touch. Our defence capabilities are sensational when one considers what we are up against. But sometimes the immune system is totally overpowered by the lethal viruses, infectious bacteria, diseases and toxic chemicals and medicines that make us sick, it just cannot compete and fails us.

Desperate for safe, effective medicine

For well over half a century doctors have chosen medicines for their patients from a veritable smorgasbord of drugs, many of which undermine the human immune system and should be canned. Indeed, many conventional drugs are so toxic to the body they should be classified as poisons. This arsenal of chemicals that masquerade as medicines has been designed by pharmaceutical companies specifically to keep symptoms under control, rather than preventing or curing disease. [43]

The manufacture and marketing of products that contain and emit substances that make us sick and cause death will never stop. To defend against this legal toxic violation, it is vital that one's immune system can constantly operate at its optimum capacity. With regular assistance, there is absolutely no doubt that our dynamic inate defence force can maintain this condition. The public should be educated about everything that will help their body to fight the poisons and pathogens that undermine our health; all of the cards *[choices]* should be on the table.

Pentosan polysulphate has unique credentials

The revelation of a potent medicine that will safely fortify and boost the natural defence and healing processes that are contained within our immune system and promote the healthy growth of new tissue, would be enthusiastically welcomed by one and all. There is absolutely no doubting pentosan polysulphates unique credentials on all fronts.

SCIENCE

As far back as I can remember the medical establishment has been saying there will be cures *[for diseases]* in 5, 7 or 10 years time. They repeat the rhetoric but do not produce cures. I draw a line in the sand. On one side I see scientists *[ologists']* whose work is based on experimentation and driven by curiosity. By observation and measurement they study disease processes and teach the next generation of researchers and doctors about diseases. On the other side, I see the sick people of this world who are desperate to be treated with medicines that will make them well, NOW! Looking at the whole picture, I see that one side studies the diseases that are affecting and often killing the other.

The claim "we have a cure for diseases" would mean the end of research. If diseases are eradicated by a cure they cannot be studied and there is no reason to continue funding the search for something that has been found.

Be prepared: Polio was supposed to be eradicated. But since 2003, polio has been imported or re-established in 16 countries that were previously free of the disease. *[Call in the plumbers!]* In 2002 a small group of US researchers built an infectious polio-virus from scratch. They used only a genetic blueprint from the Internet as a guide and mail-order and tailor-made sequences from a laboratory supply service to assemble the deadly virus. The man-made virus led to paralysis or death in mice engineered to carry the human receptor for polio-virus. **"The world had better be prepared. This shows you can recreate a virus from written information."** *[Eckard Wimmer, study leader]* [42]
Ten years time - A recent comment by a scientist on a potential cure for Hepatitis-C caught

my attention. “It is an exciting time for researchers, preliminary results are encouraging, but there is still a lot of work to be done. In 10 years time we’re hopeful we will have a cure”. [60 Minutes, TV3. 6-11-06]. Ten more years!

Science is about the future

Scientists are now rampaging towards a futuristic goal of providing cures for diseases using genetic engineering. This *[GE]* technology interferes with nature’s laws. Human DNA is altered, human genes are crossed with those of animals and plants, embryo’s are taken apart to access stem cells, human and other species are cloned and tissue and organs are made from a variety of human and hybrid stem cell lines etc, in petri dishes in laboratories. Genetic engineering is known as the nascent or emerging field of regenerative medicine.

Less than ten years ago genetic engineering was to the public, science fiction. Now, scientists are using the emotive issues of trying to find cures for degenerative diseases, cancer, Alzheimer’s, Parkinson’s etc, and extending longevity of life, to sway public opinion into accepting this new scientific frontier, this vogue of freakish experimentation.

Pentosan polysulphate, is a pure regenerative medicine; it is safe, it is effective. Pentosan assists the body to repair damaged and regenerate new tissue and as such, restores the balance of structure and function within the body. This physiological state is known in medical science as homeostasis. *[Visco-supplementation, p17]*

A CLASS OF ITS OWN

There is a popular assumption that finding a single knockout cancer drug, or a magic bullet for any disease, is as unlikely as finding the legendary holy grail. After almost a century, the world's top academics in tandem with their partners its richest drug companies, are still searching for cures and we accept this without question.

In 1998, the British Government refused to allow the use of pentosan polysulphate to treat people who were dieing from the human form of BSE, vCJD, and also those who might have been exposed to it, saying toxicity was the main reason. However, they contradicted their decision by making it available for scientists who may become infected with vCJD accidentally in a laboratory. Dr Stephen Dealler said he would use pentosan if this happened to him. Even though in this instance one would have an oral or injection dose, the Governments decision indicated that the medicine is safe [otherwise they would not subject their scientists to it] and would get rid of the CJD prion before it entered the central nervous system and the brain. It follows then, that direct infusion of it into the brain would also safely take-out the disease.

To the chagrin of those who opposed Dr Stephen Dealers call for pentosan’s use for vCJD, Johnny Simms has shown this to be the case. Drug companies have designed thousands upon thousands of drugs however the chosen medicine was a sulphated sugar from the bark of the beech tree – pentosan polysulphate. It worked, and safely! A class of its own, indeed.

Cannot be patented

Being a generic medicine [not protected by a trademark] pentosan polysulphate cannot be patented. Nor can it be claimed, owned by any one pharmaceutical company. This probably accounts for its low price. A friend said of pentosan “maybe this medicine treats all?” It certainly appears so and of course there are always exceptions. However, sick people would probably want to try pentosan as an alternative to the drugs that doctors prescribe, because they do not heal and have safety profiles that leave a lot to be desired- the desire to be treated with a non-toxic medicine that restores ones health.

Paradigm shift

As I continued to learn more about this medicine I concluded that regardless of the flippant and flawed reasons given by medical professionals and health officials why pentosan polysulphate is not a treatment option, it simply is not on the medicine menu because it works and safely. This suggestion may seem ludicrous, but is it really?

If doctors across the world began to treat their patients with pentosan as soon as they showed signs of ill health, we could see it become awash with redundant scientists and empty laboratories, drug company control over world health diminish and medical specialists with more time to play bowls. Along with the domino effect on all companies, organizations, agencies, societies and individuals with a vested interest in sick people, the result would be ... interesting! Such an unthinkable *[for some]* scenario would come about because the completely unreasonable and unacceptable numbers of people across the world who are sick, suffering and dieing from diseases that apparently have no cure, would without question be dramatically reduced. A seriously overdue paradigm shift.

Ready for use

Pentosan polysulphate is an officially classified anti-viral, anti-retroviral, anti-cancer, anti-inflammatory and anti-coagulant medicine. Pentosan is also a potent anti-biotic. It is one of a group of sulphated polysaccharides *[also not patentable]* that includes dextran sulphate, heparin sulphate and carrageen *[seaweed]*, which are also known to safely and effectively treat diseases. But pentosan polysulphate stands apart from everything else because of the prime status in our biology of the sugar of which it is made, pentose, the 5-carbon sugar that defines deoxyribo-nucleicacid - our DNA.

Pentosan polysulphate is a prototype medicine. I call it the original DNA medicine because it is after all [to quote Watson] “the stuff of genes.”

Fresh logic required

I often wonder if our health officials actually want solutions to the burgeoning health problems that are affecting people and which are now a heavy burden on health funding. If the Ministry of Health was genuinely concerned about improving the health of New Zealanders, which is obviously the main requirement for a reduction in health spending, instead of constantly complaining about the ever increasing costs of health care they would give the public some very good news – xylitol, and encourage doctors to use pentosan polysulphate. Both are keys to improved health that are missing in this country.

As we move through the 21st century, fresh logic is urgently required of those who make the decisions on matters of health for sick people because the status quo very clearly does not favour them. However before we see such enlightenment we may have to wait for a new generation of decision makers to enter, because the old establishment will not change its mind.

So, while the world continues to patiently wait for scientists to find cures for diseases and generous people continue to pour billions and billions of dollars into their research funding and associated foundations, trusts and organizations, I am calling in the mean time for pentosan polysulphate to be used universally as a treatment for sick people, starting today.

Considering its unique provenance, does anyone have the right to prevent its use?

In questinons of science
the authority of a thousand
is not worth the humble reasoning
of a signle individual.(1)

Galileo Galilei (1564-1642)

PHARMACOLOGY OF PENTOSAN POLYSULPHATE

[Modes of action]

1. Supports and enhances the macromolecular bio-synthesis by chondrocytes of DNA, RNA, collagen, proteoglycans and extra-cellular matrix.

2. Supports and enhances synovial lining cell synthesis of synovial fluid components, especially hyaluronic acid, which keep the fluid functioning optimally as a lubricant and protector of the cartilage surfaces.

3. Inhibits degrading enzymes and /or mediators implicated in the degeneration of cartilage, extra-cellular matrix and synovial components. i.e. hyaluronidase, collagenase, metalloproteinases, cathespins, interleukin-1, tumour necrosis factor *[TNF]*, PGE2.

4. Mobilises blood clots; blood flow and perfusion of joint tissues and subchondral bone is increased as a result. Fibrin, lipids and cholesterol deposits are also mobilised, cannot build up.

Ref: http://www.arthritis.au.com *[Clinical Scientific Information]*

SUMMARY

First I will do no harm, from the Hippocratic Oath, seems to have become, first I will poison you. Most of the drugs that are used to treat sick people have adverse or toxic effects that harm human tissue. This outcome is accepted by the doctors and specialists who prescribe their use. Physiciansprescribe their patients more drugs and more of each drug to consume daily. Over time the toxicity of the drugs can cause their tissues, blood vessels and organs to break down and they suffer terribly sometimes for decades. Has the medical profession lost its way? How can it be that the worlds top academics approve of their medical treatment regimes?

The modern version of the Hippocratic Oath *[1964. Ref 81]* states **"I will prevent disease wherever I can, for prevention is preferable to cure."** The world is constantly told by doctors of medicine that they have no cures. Why then are they not offering their patients preventative or prophylactic medicines?

Pentosan polysulphate is one such medicine, a prophylactic. Unlike the drugs that are designed by pharmaceutical companies to target specific tissues, cells and organs, pentosan does not discriminate, it acts on the whole body and does not harm healthy tissue. Most medical drugs comp-romise biological integrity, pentosan does not. On the contrary this medicine which is a sulphated sugar derived from the bark of the beech tree, triggers the body's own healing mechanisms into action, assisting them to restore and maintain the balance of function and structure that exists in a healthy body...homeostasis. Maybe this is due to the sugar being the same 5 carbon pentose sugar that is in our DNA?

I know from personal experience that pentosan can stop rheumatoid arthritis, Jonathan Simms's very unexpected recovery from nvCJD *[mad-cow]* has silenced the medical science community and decades of research shows that it is effective against, seemingly, all health anomalies. Pentosan polysulphate is not quackery or 'snake oil'. It is a medicine that has been used in many countries for over 50 years to treat a variety of health disorders. It is safe, effective and cheap and regardless of the New Zealand laws and regulations that keep pentosan polysulphate off the general medicine menu, doctors can access it and offer it to their patients as a treatment option.

Linda Curreri
Dunedin,
New Zealand. [Sept.30-'09]

Further Reading

http://www.arthritis.au.com [Arthropharm]
http://www.ncbi.nlm.nih.govt/entrz/ [research]
http://www.pubmedcentral.nih.gov/ [research]
http://www.airtime.co.uk/bse/welcome [Dr Dealler]
http://www.xlear.com/xylitol [Dr Lon Jones]
http://www.xylitol.org [very informative site]
Internet word search. Dictionaries and encyclopedias.

References

1. Hutchinson Dictionary of Scientists 1997
2. www.arthritis.au.com (Clinical Scientific Information)
3. www.intekom.com/pharm/hmr/tavan.html
4. Elmiron(r) package insert
5. www.nzfsa.govt.nz/animalproducts/legislation
6. www.facmed.unam.mx , www.biam2.org , www.bene-gmbh.de
7. www.supervet.co.uk (Cartophen-Vet)
8. Correspondence with Prof John Highton , 1997-2001.
9. http://www.freepatentsonline.com
10. de Clercq et al.; http://www.pubmedcentral.nih.gov
10.1 Pentosan polysulphate, a sulphated oligosaccharide is a potent and selective anti-HIV agent in vitro. 1988 Antiviral Res. 9.
10.2 Sulfated polysaccharides are potent and selective inhibitors of various enveloped viruses, including etc. Antimicrob Agents Chemother. 1988 November; 32. http://www.pubmedcentral.nih.gov
11. http://www.plpk04.plpk.uq.edu.au (Dr I Shiels Lect.17)
12. Tales of the Turf, Max Presnell. SPORT, Sydney Morning Herald. 28-May-1999
13. Ref: Viscosupplementation; a new concept in the treatment of osteoarthritis. Journal of Rheum. 1993, Vol. 20, Supp.39
14. Journal of the National Cancer Institute 1990; www.aidsinfobbs.org
15. Fibrin Is Critical In Regeneration Of Myelin Sheath http://unisci.com/stories/20021/0314026.htm (19-March-2002)
16. Pub Immunology Vol 106. July 2002 (Effects of C-reactive protein and pentosan polys'e on human complement activation)
17. Inhib of calcium oxalate crystallisation by pentosan polysulphate British J. of Urology. Dec. 1984.
18. Graham Steel, CJD Alliance, info@cjdalliance.org.uk
19. http://www.airtime.co.uk/bse/welcome
20. Corresp. from Dr Harald Benend, Bene-gmbh. 25-8- '00
21. http://www.freepatentsonline.com/6593310.html
22. Assoc'n of Veterans Admin's Surgeons, April 2004 www.hsc.wvu.edu/som/surgery/faculty/kandzari.asp
23. Journal Breast cancer research and treatment. Animal models of breast cancer. 1996, vol. 39.
24. Wayne State University School of Medicine, Michigan Cancer Foundation, Detroit. Anticancer Res. 1993 Nov-Dec.
25. Prostate Cancer Prostatic Dis. 2003; Univ of Miami School of Medicine,Florida,USA.

26. Journal National Cancer Inst. 83:716-720, 1991
27. http://naturevet.com/ProductProfile
28. http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=236688
29. www.bene-gmbh.de
30. J. Biol. Chem., Vol. 276, Issue 25, 22420-22425, June 22, 2001
31. http://www.eurekah.com/pdf/twardowski14.html (angiogenesis inhibitors)
32. Article by Brian Bacheldore.
33. http://www.mesomorphosis.com/articles/rea/030903.htm
Joint Matrix Protocols. by L. Rea
34. http://www.ncbi.nlm.nih.gov/pubmed/17071199
35. www.westchesterwag.com July 2002
36. Inhibition by pentosan polysulfate (PPS) of heparin-binding growth factors release from tumor cells and blockage by PPS of tumor growth in animals. Journal Nat. Cancer Inst. vol 84.
37. www.mayoclinic.com/health/thalidomide
38. http://www.medsafe.govt.nz/profs/PUarticles/Arava.htm
39. http://www.rheumatology.org/public/factsheets/biologics.asp
40. http://www.nzma.org.nz/journal/117-1192/842/
41. www.nature.com/ncprheum/journal/v2/n11/full/ncprheum0336.htm
42. www.geocities.com/giantfideli/cellnews_dangerous_virus_made _from _mail-order_kits.html
43. www.soapimg.icecube.snowfall.se/strama/AIS%20Report%20React.pdf
Antibiotic Innovation Study: Expert Voices on A Critical Need.
Sophia Tickell Nov. 2005
44. www.xtra.co.nz 21 April 2002.
45. Neuroprotective effect of pentosan polysulphate on ischemia-related neuronal death of the hippocampus. http://www.ncbi.nlm.nih.gov/entrez/
46. A Critical Life, Ronald Hayman
47. www.mombu/t-thalidomide-pharmion-approved-in-new-zealand-multiplemyloma-924204.html
48. CJD Discovery- Mice Cured in 'Spectacularly Successful Experiment'. BBC 1-9-99
49. Div of Immunology and Genetics, Australian Nat. University, Canberra, Australia. http://www.ncbi.nlm.nih.gov/entrez/
50. GOOGLE Internet word search.
51. http://www.thefreedictionary.com
52. www.nlm.nih.gov/medlineplus/druginfo/medmaster/a699032.htm
53. http://www.nature.com/jid
54. http://www.nytimes.com/2003/05/11/magazine/-why-is-jonathan-simms-still-alive.html?pagewanted=2
55. http://www.medterms.com/script/main/art.asp
56. http://www.mayoclinic.com/health/amyloidosis
57. http://www.enzogenol.com
58. http://www.accessexcellence.org/RC/VL/GG/rna.html
59. Maurodi Pasquale, M.D. Am. J. Clinical Nutrition. April '97; www.allprotraining.com
60. http://www.xlear.com/xylitol/
61. http://www.xylitol.org/
62. www.arclab.org/medlineupdates/abstract
63. htpp://www.intmed.uiowa.edu/research/ResearchDay/Posters/Taft/Default.htm
64. http://textbookofbacteriology.net/pseudomonas.html

65. Ref: "http://www.dansicosweeteners.com" (August 6-2003)
66. M. Georgieff et al; Journal Parental & Enteral Nutrition 9(2). 1985
67. Arthritis Rheum. April 2000. Takizawa M, Ghosh P, et al, Tokyo, Japan. http://www.ncbi.nlm.nih.gov/entrez
68. Fax to Norton HealthCare, UK Elmiron distributors.
69. Structural Formula of Xylitol. www.kirjasto.oulu.fi/english
70. http://www.myphlip.pearsoncmg.com/altproducts/drugguide
71. http://www.members.tripod.com/~brian.terry/vetinfo_frame.html
72. The US National Library of Medicine. www.aegis.com/pubs/drugs
73. How Xylitol-cont. Products Affect Cariogenic Bact. J. Am. Dent. Assoc., April 2000
74. http://www.pubmedcentral.nih.gov
75. Journal of Dental Education. Vol. 65, No.10.
76. Collins Dictionary of Biology
77. Gumpel J.M. British Medical Journal 1978; 2, p. 457
78. http://www.ajcn.org/cgi/content/abstract/65/4/947
79. www.caloriecontrol.org/sweeteners-and-lite/polyols/xylitol
80. Fax from Dr Cullis-Hill to Dr Lay
81. www.medicinenet.com/ Louis Lasagna, Dean of Med, Tufts Univ.

PENTOSAN POLYSULPHATE

A MEDICINE MADE FROM BEECH BARK

by
Linda Curreri