



Natural Health Solutions

Sunpab Health

Professional Catalogue



**QUALITY.
TRUSTED.
INNOVATIVE.**

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Natural Health Solutions

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About Sunpab

- Australian made and Australian owned
- Backed by a team of Pharmacists, Naturopaths, Nutritionists and Medical Scientists
- Manufacturers of quality, evidence based, natural health products
- Internationally renowned company
- The manufacturer of scientifically validated products
- Approved by the regulatory authority of Australia (TGA)
- Ingredients have been scientifically validated as well as used traditionally for centuries in different parts of the world

Our activities:

Sunpab Health Pty Ltd employs staff from a diverse range of backgrounds, majority are health professionals. The company is involved in:

- ◆ Pharmaceutical Manufacture
- ◆ Herbal/Nutritional Supplement Manufacture
- ◆ Medical Device Manufacture
- ◆ Raw Material Sourcing
- ◆ Formulations
- ◆ Packaging



“We believe in our products because we know they are of superior quality, formulated by our professional research and development team. We will continue to be the leaders in complimentary healthcare in Australia and overseas”

Sunpab Health Sydney, Australia



Natural Health Solutions

Our Vision

Sunpab is an innovative, Australian based, international company.

We strive to manufacture and distribute superior quality, natural, health products of innovative formulae. Our products produce maximum therapeutic effect and meet customer demand.

“Share our vision and values, share our products and our dream.”

Our Values



GMP Overview



Sunpab Health

Sydney, Australia

Sampling of Raw Materials

- All Raw Materials are sampled in a 'state-of-the-art' GMP Sampling Booth
- Operators change into GMP garments
- Sampled under HEPA-filtered Laminar-Flow Air
- Provision for Nitrogen Flushing
- Labels printed in Sampling Booth from MRP System
- Separate samples taken for Chemical & Microbiological testing, plus Retention samples
- Provision for vacuuming any spills

Raw Material Sampling Booth



Testing Capabilities



Agilent Gas Chromatograph



- Fat Soluble Vitamins
- Fish Oil Raw Materials
- Fatty Acid Profiles
- Residual Solvents
- Fish Oil Softgels



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Pain Eze™



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Pain Eze

Clinical Update: Product Overview

What is Pain Eze?

Pain Eze™ is a natural herbal supplement which acts in five ways to relieve pain and stiffness as well as help rebuild the joint. Each of the ingredients compliment the action of others in this truly superior formula. Patients are experiencing relief from symptoms within days.

What is in it?

Glucosamine Hydrochloride

assists in rebuilding worn cartilage, and to maintain healthy joints and mobility. **Pain Eze™** contains Glucosamine Hydrochloride, which is a scientifically proven, more effective form than other brands on the market, for cartilage rebuilding action.

Manganese potentiates the action of Glucosamine Hydrochloride to rebuild and protect against wear. It also helps protect against further damage by functioning as an antioxidant.

Gotu Kola may assist in pain relief and proper circulation of blood. Many pain medications have side effects. That's why people are opting for a natural and effective pain killer.

Ginger has been used for centuries to reduce pain in musculoskeletal conditions. Much scientific evidence has been documented on Ginger's ability to reduce pain in arthritis sufferers.

Celery may reduce the fluid build up around the joint that causes 'puffy' painful joints and restricted movement. Celery is excellent for the reducing the inflammation associated with arthritis and may also increase elimination of urates from the kidneys and assist in gout.

What can Pain Eze do for me?

- Reduce pain and inflammation associated with arthritis
- Help rebuild cartilage
- Help you get moving again by repairing the joint
- For the temporary relief of back pain and gout

What are the special features of Pain Eze?

1. Contains a scientifically validated form of Glucosamine with a catalyst
2. Contains 5 active ingredients in one easy to swallow caplet for arthritis joint and bone health
3. Australian made and owned



GLUCOSAMINE HCl: A Historical Perspective

INTRODUCTION

Glucosamine hydrochloride is more effective than other glucosamine forms and its benefits shall be discussed in this paper, bringing to light the historical rationale for the use of other forms and the most recent research detailing the effectiveness of glucosamine hydrochloride in treating osteoarthritis.

DISCUSSION

Glucosamine is an aminomonosaccharide, naturally occurring in the human body. It is one of the principal substrates for the biosynthesis of glucoaminoglycans, it stimulates the biosynthesis of proteoglycans whilst restoring damaged chondrocytes, and, in its acid salt form, it is used in the therapy of arthritis due to its role in cartilage formation and repair, pain relief, increased joint flexibility, and its role in relieving the symptoms of established osteoarthritis.

Since conditions such as osteoarthritis result from an imbalance between the rate of synthesis and the rate of degradation of cartilage proteoglycans where degeneration exceeds synthesis, it follows that increasing the availability of glucosamine will, in turn, increase the production of cartilage proteoglycans and, thus, potentially decrease joint pain and increase flexibility.

Supplementation is achieved through the ingestion of glucosamine in the form of one of its biocompatible acid salts such as the hydrochloride and / or sulphate forms. Such salts are 100% ionised in stomach acids (dilute hydrochloric acid at a pH 1 to 3), which makes the glucosamine readily available throughout the digestive process. In the small intestine, the pH rises to approximately 6.8 and 54% of the glucosamine converts to the neutral amino sugar (Setnikar 1986). Since neutral molecules move through cellular membranes much more readily than ionised salts, this conversion facilitates the absorption of glucosamine into the blood stream. The pH of blood is approximately 7.4 and approximately 75% of the glucosamine in the blood stream exists in its neutral amine form, which contributes directly to its bio-availability. Again, this favourable balance toward the neutral form further enhances the ability of glucosamine to readily pass from the blood stream into the articular joints of the body.

Sulphate, chloride and other salts are primarily passed from the body as waste (perspiration, urine etc). The sulphate salt initially attached to the glucosamine before ingestion does not fully enter into production of glucoaminoglycans. Early research achieved by Roden (1956), Karze & Domenjoz (1971), Kim & Conrad (1973), and Plana (1978) clearly establishes the fact that Glucosamine Hydrochloride is extremely effective in increasing the production of Glucoaminoglycans.

In 1956, L.Roden of the Karolinska Institute in Stockholm Sweden published one of the first studies showing that the inclusion of Glucosamine Hydrochloride effectively enhanced the production of chondroitin sulphates .

Roden's work was followed in 1971 when Karzel and Domenjoz , who carried out a study, that tested Glucosamine HCl, Glucosamine Iodide, and Glucosamine Sulphate with the addition of all 3 salts causing increased GAG production (157 to 170%) In addition to confirming Roden's previous work, Karzel's study showed that, on an absolute weight basis, Glucosamine Hydrochloride had the strongest effect. When compared on a molecular weight basis, there was no difference between all three salts. This supports the argument that you need less of the hydrochloride and more of the sulphate to produce the same therapeutic effect.

It is important to note that, when they studied the pharmacokinetics of glucosamine, the Rota researchers used C14 tagged- glucosamine hydrochloride that was physically mixed with untagged-glucosamine sulphate. **The studies showed that the tagged glucosamine (Glucosamine Hydrochloride) was well absorbed (anionic) after oral administration and it had a special affinity for articular (joint) tissue.**

In the first published work since 1980, not under the auspices of Rota Research, Clark et al at the Univ. of Penn. School of Medicine published a study in 1991 showing that the addition of Glucosamine Hydrochloride restored production of normal sized chondroitin sulphate chains (a large protein that gives cartilage elasticity) in major cartilage. (*Biochem J.* 1991, 273)

Clark's work, like early work by Roden, Karzel, Kim and Plana, showed that the hydrochloride salt of glucosamine is quite capable of producing a positive effect on the production of chondroitin sulphate. The sulphate form of glucosamine is not required to produce or enhance this effect.

Glucosamine hydrochloride was chosen instead of glucosamine sulfate for a number of reasons. Table 1 displays the superior availability and purity of glucosamine hydrochloride. A dose of 1,500mg of glucosamine hydrochloride is equivalent to 1,985mg of glucosamine sulphate. This is because the hydrochloride form carries 83.1% active glucosamine, where as the sulphate form carries only 62.8%.

GLUCOSAMINE Hydrochloride vs. Sulphate		
Glucosamine Hydrochloride	Comparative Attribute	Glucosamine Sulphate. 2NaCl (or 2KCl)
99+ %	Purity As the specific salt	80% 75%
83.1%	Bio-Active Glucosamine As the free base	62.8% 59.5%
1,500mg	Equivalent Dosage Based on active	1,985 mg 2,095 mg

Table 1. Comparison of Glucosamine Hydrochloride to Glucosamine Sulphate

Purity: Glucosamine hydrochloride is highly stable and manufactured to a purity of over 99% with less than 0.1% ash on ignition. This stable form of glucosamine is readily absorbed by the body and is the most cost effective form of glucosamine available. On the other hand, pure glucosamine sulphate is very hygroscopic and degrades rapidly (goes from white to off-white to tan to brown) when exposed to moisture. For this reason, the sulphate is only 75-80% pure and it must be stabilised with approximately 20% sodium (or 25% potassium chloride by weight to prevent it from decomposing and losing its effectiveness).

Bio-Active Glucosamine: The neutral aminosugar, glucosamine, is the real bio-active material that acts as the precursor to the body's synthesis of glucoaminoglycans, hyaluronate, proteoglycans, and collagen all of these are necessary components to repair and maintain healthy cartilage and joint function. Based on the above data glucosamine hydrochloride delivers 83.1% active glucosamine while the NaCl stabilised sulphate supplies only 62.8% and the potassium chloride version supplies only 59.5% by weight.

Equivalent Dosage: The suggested daily dosage is 1,500mg of Glucosamine Hydrochloride. In order to get the equivalent amount of glucosamine found in 1,500mg of the hydrochloride, you would need to take 1,985mg of the Sodium stabilised sulphate and 2,095mg of the potassium stabilised form.

Contraindications- Hypertensive patients

Another major concern with glucosamine sulphate complex is the potassium chloride, which it could most likely cause atrial fibrillation when taken in high dose. Other types of medications, such as ACE inhibitors, will cause increased serum concentration of potassium. A high dose of potassium (hyperkalaemia) is of concern for cardiac and renal patients and atrial fibrillation was observed in clinical studies. So caution has to be exercised in patients who have underlying heart problems to prevent cardiac complications and those who take ACE inhibitors for blood pressure (Reeve J 2005).

Manganese is usually a co-factor of glycosyltransferase enzymes, which are required for the synthesis of GAG and are needed for the formation of healthy and bone. Without manganese, it would take much longer to rebuild cartilage and be less efficient in protecting cartilage (Keen CL 1996).

Recent studies by Blakeley and Ribeiro (*Complementary Therapies in Medicine* 2002, 10:154-160) indicate the combination of glucosamine and chondroitin has a less significant effect, showing that glucosamine is best taken on its own.

Dr. Alan Russell, a practicing medical doctor and director of the Brampton Pain Clinic in Bramalea, Ontario, Canada, has successfully treated over 300 arthritis patients with Glucosamine Hydrochloride and continues to do so. He stands ready to attest to the therapeutic value of this product and has done so in print.

CONCLUSION

When seeking a suitable supplementation for osteoarthritis, the presented evidence indicates that the purest, most highly bioavailable form of glucosamine is **glucosamine hydrochloride**. It is absorbed more efficiently due to its neutral form; it is 99% pure; it provides body more of the active glucosamine therefore less is needed. New research clarifies the superior form of glucosamine, being glucosamine hydrochloride, and the many health professionals who use glucosamine hydrochloride to treat and relieve the effects of osteoarthritis.

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Glucosamine Hydrochloride vs. Sulfate

Research & Development Unit

Sunpab Health Sydney, Australia

Glucosamine hydrochloride was chosen instead of glucosamine sulphate for a number of reasons. The hydrochloride form is more concentrated than the sulphate form, and the hydrochloride form contains substantially less sodium per effective dose than the sulphate form. Glucosamine sulphate is stabilised with sodium chloride (table salt) and can contain as much as 30% sodium. This is a consideration for individuals who want to reduce their dietary intake of sodium.

Glucosamine hydrochloride offers the promise of the same efficacy as glucosamine sulphate, since glucosamine is not absorbed intact with its carrier. The body doesn't care how it gets glucosamine as long as it is bio-available. Nonetheless, we embarked on clinical research to prove the efficacy of the hydrochloride form.

We first conducted pilot testing, which indicated benefit for those with osteoarthritis. We then went forward with a full-scale, double-blind, placebo-controlled intervention trial with glucosamine hydrochloride, the results, of which, are published in the Journal of Rheumatology listed in the references on the next page. Results showed a strong, beneficial effect for between 60 and 70% of the subjects, compared to their baseline symptoms.

In summary, chondroitin has no scientific rationale for an orally-taken glucosamine product. There is no evidence to suggest that glucosamine sulphate offers advantages over glucosamine hydrochloride. There is no need for glucosamine hydrochloride to be stabilised with salt. Hydrochloride offers a more concentrated form of glucosamine. Given these facts, the glucosamine product of choice for consumers should be Glucosamine hydrochloride.

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Glucosamine Toxicology

Research & Development Unit

Sunpab Health Sydney, Australia

Evidence that glucosamine is effective in the treatment of arthritis continues to build.

Reginster et al's randomised long term (3 year) trial demonstrated that glucosamine has a clear disease-modifying effect, displaying improvements in pain and joint function and the absence of long-term harm.

Reginster et al. Randomised trial:

Patients aged over 50 years and with primary knee osteoarthritis were randomised to 1500 mg oral glucosamine sulphate once daily or placebo. The mean age was 66 years, and the mean duration of their osteoarthritis was eight years.

The primary outcome was the mean joint space width of the medial compartment of the tibiofemoral joint, with X-rays taken with patients standing, and using a validated measuring system using digitised images. Pain, functioning, stiffness and consumption of analgesics were also measured, and measurements were taken at baseline, and one and three years. Two hundred and twelve patients were randomised with 71/106 on placebo and 68/106 with glucosamine. The trial was completed in three years.

The average joint space width was about 5.4 mm at baseline. With placebo there was a mean narrowing (a sign of progression of the disease) of 0.3 mm over three years. With glucosamine there was no narrowing. After three years, 32/106 patients (30%) on placebo had a significant joint space narrowing of more than 0.5 mm, compared with 15/106 patients (15%) with glucosamine. The relative risk of significant joint space narrowing with glucosamine was 0.5 (0.3 to 0.9), and the number of patients needed to be treated for three years to prevent one patient having significant joint space narrowing compared with placebo was 6.6 (3.8 to 25).

With placebo there was no overall change in pain or functioning. With glucosamine there was a significant improvement of 20-25%. Stiffness was not affected, and the consumption of analgesics or NSAIDs was not different. Patients used rescue medicines on average once every six days.

Adverse events were reported by 95% of patients over the three years. **Most were transient and mild, not clearly related to treatment, and there were no differences between glucosamine and**

placebo. Adverse event withdrawals occurred in 21/106 patient on glucosamine and 18/106 on placebo (relative risk 1.2; 95% confidence interval 0.7 to 2.1).

Ultimately the trial suggests that important benefits can be gained from glucosamine supplementation to positively treat arthritis. The study also indicates that there is no considerable harm in long-term supplementation of glucosamine with it exhibiting no known toxicity over the sample three years of application.

Reference:

Reginster JY et al (2001), 'Long-term effects of glucosamine sulphate on osteoarthritis progression: a randomised, placebo-controlled clinical trial', *Lancet*, 357: 251-256.

A clinical trial of Pain Eze at Castle Hill Medical Centre, Sydney Australia was conducted in January 2004. The double blind trial involved 1205 patients with unilateral osteoarthritis of the knee and compared the efficacy and tolerance of oral treatment Pain Eze (natural) tablets with 1.2g Ibuprofen daily over an 8 week period. Dr. Panetta of the clinic was 'amazed at the quick onset of action of this product in alleviating arthritic pain, and within three weeks 80% of my patients were pain free and overall more mobile'. Overall an 86% therapeutic efficacy in the management of Arthrosis rated "excellent or good" out of 1205 patients in the trial which is exceptional for a natural arthritis formula with no side effects noted. **Patients are still taking natural Pain Eze glucosamine tablets last observed January 2007 and have been for a total of three years.** As a result patients have decreased their prescription of Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) and have been continuing to take natural Pain Eze glucosamine tablets.

Reference:

Dr. Raphael Panetta MBBS (Syd) MB (USA), Castle Hill Medical Centre Clinical Research Consultant, Sydney Australia (Jan 2004). Document available by request.

Scientific and Clinical Evidence to Verify Claims Made for Pain Eze Arthritis Natural Formula

Claim	What Studies Indicate	References
<p>1. Glucosamine HCL is better absorbed than Glucosamine Sulphate</p>	<p>Pharmacokinetics Supplementation is achieved through the ingestion of glucosamine in the form of one of its biocompatible acid salts such as the hydrochloride and / or the sulphate.</p> <p>Such salts are 100% ionised in stomach acids (dilute hydrochloric acid at a pH 1 to 3), which makes the glucosamine readily available throughout the digestive process. In the small intestine, the pH rises to approximately 6.8 and 54% of the glucosamine converts to the neutral amino sugar. Since neutral molecules move through cellular membranes much more readily than ionised salts, this conversion facilitates the absorption of glucosamine into the blood stream. The pH of blood is approximately 7.4 and about 75% of the glucosamine in the blood stream exists in its neutral amine form. Again, <u>this favourable balance toward the neutral form further enhances the ability of glucosamine to readily pass from the blood stream into the articular joints of the body.</u> Glucosamine hydrochloride is a neutral substance.</p> <p>Sulphate, chloride and other salts are primarily passed from the body as waste (perspiration, urine etc). The sulphate salt initially attached to the glucosamine before ingestion does not fully enter into production of glucoaminoglycans. <u>The early research work by Roden (1956), Karze & Domenjoz (1971), Kim & Conrad (1973), and Plana (1978) clearly establishes the fact that Glucosamine Hydrochloride is extremely effective in increasing the production of Glucoaminoglycans whereas the Glucosamine sulphate form is more easily passed through the body.</u></p> <p>Warning: Glucosamine Sulphate complex contains approximately 25% potassium chloride in the formulation. <u>Potassium is contraindicated</u> in patients with renal failure and/or patients on ACE inhibitors (blood pressure medications).</p> <p>Bio-availability Purity- Glucosamine hydrochloride is highly stable and manufactured to a purity of over 99%. On the other hand the sulphate is only 75-80% pure and it must be stabilised with approximately 20% sodium (or 25% potassium chloride by weight to prevent it from decomposing and losing its effectiveness.</p> <p>Bio-Active Glucosamine- The neutral aminosugar, glucosamine, is the real bio-active material that acts as the precursor to the body's synthesis of glucoaminoglycans, hyaluronate, proteoglycans, and collagen- all of these are necessary components to repair and maintain healthy cartilage and joint function. Based on the data glucosamine hydrochloride delivers 83.1% active glucosamine while the NaCl stabilised sulphate supplies only 62.8% and the potassium chloride version supplies only 59.5% by weight.</p>	<ul style="list-style-type: none"> Houpt JB, McMillan R, Wein C, Paget-Dellio SD, 1999, Effect of glucosamine hydrochloride in the treatment of pain of osteoarthritis of the knee, J Rheumatology, Nov;26(11):2423-30. Nakamura H, Masuko K, Yudoh K, Kato T, Kamada T, Kawahara T, 2006, Effects of glucosamine administration on patients with rheumatoid arthritis, Rheumatology Int., Sept, no.5 Svetlova MS, Ignat'ev VK, 2005, Experience with glucosamine hydrochloride in the treatment of patients with osteoarthritis, Ter Arkh (Russian), vol 77(12):64-7. Lopes Vaz A. "Double-blind clinical evaluation of the relative efficacy of ibuprofen and glucosamine sulphate in the management of osteoarthritis of the knee in out-patients." <i>Curr Med Res Opin.</i> 1982;8(3):145-149. Setnikar I, Pertusi R, Canali S, Zanolo G. Pharmacokinetics of glucosamine in man. <i>Arzneimittel-Forschung.</i> 1993;43:1109-13.

Claim

1. Glucosamine HCL is better absorbed than Glucosamine Sulphate

What Studies Indicate

Equivalent Dosage- The suggested daily dosage is 1,500mg of Glucosamine Hydrochloride. In order to get the equivalent amount of glucosamine found in 1,500mg of the hydrochloride, you would need to take 1,985mg of the Sodium stabilised sulphate and 2,095mg of the potassium stabilised form.

GLUCOSAMINE Hydrochloride vs. Sulphate		
Glucosamine Hydrochloride	Comparative Attribute	Glucosamine Sulphate. 2NaCl (or 2KCl)
99+ %	Purity As the specific salt	80% 75%
83.1%	Bio-Active Glucosamine As the free base	62.8% 59.5%
1,500mg	Equivalent Dosage Based on active	1,985 mg 2,095 mg

Table 1. Comparison of Glucosamine Hydrochloride to Glucosamine Sulphate

In conclusion, Glucosamine hydrochloride is:

- Absorbed more efficiently due to its neutral form
 - Is 99% pure
 - Provides the body with 83.1% active glucosamine (whereas Glucosamine sulphate only provides 62.8%)
- There is more active ingredient within Glucosamine hydrochloride therefore less is needed, ie. 1500mg of Glucosamine hydrochloride is equivalent to 1985mg Glucosamine sulphate.

2. After three weeks of taking Pain Eze, a significant reduction of pain and swelling is achieved on osteoarthritis

- **Pain Eze: Quicker Onset of Action**
Preparations containing only Glucosamine take a longer time to produce results (6-8 weeks). When Glucosamine is coupled to the co-factor manganese, such as in Pain Eze, the results are quicker as the body is able to convert glucosamine to glucoaminoglycans, the building block of cartilage. This means the therapeutic response is much faster. In some patients this can be within 2-3 weeks. (Blakely & Ribeiro, 2002)

- **Clinical Trial conducted by Dr R. Panetta, 2004**
"I was amazed at the quick onset of action of this product in alleviating arthritic pain, and within **3-4 weeks** 80% of my patients were **pain free and overall more mobile**. I have found the therapeutic effect of Pain Eze much more effective in treating arthritis than other monocomponent preparations consisting of only Glucosamine, which I have used in the past, before Pain Eze was released on the Australian market. Once again I personally feel it is the synergistic effect of the ingredients in the Pain Eze formula that makes it much more superior to other monocomponent Glucosamine preparations I have used in my clinic in the past."

Dr. Raphael Panetta MBBS (Syd) MD (USA)
Clinical Research Consultant
Terminus St Medical Centre, Sydney

Blakeley JA., Ribeiro V. A Survey of Self-medication Practises and Perceived Effectiveness of Glucosamine Products Among Older Adults. *Complementary Therapies in Medicine* 2002;10:154-160.

Murray MT. Which is better: Aged versus fresh garlic; glucosamine sulfate versus chondroitin sulfate. *American Journal of Natural Medicine* 1997;4:5-8.

Ruane, R. & Griffiths, P., Glucosamine therapy compared to ibuprofen for joint pain, *British Journal of Community Nursing*, 2002; vol.7, no.3, 148-152.

3. On gouty arthritis, celery and Gotu kola helps in the breakdown of uric acid

- **Gotu kola**

Gotu Kola, also known as Pennywort, is a well known natural remedy to assist pain relief and proper circulation of blood. Gotu kola has the ability to extract and decompose uric acid deposits from the joint. Gotu kola also increases glutathione, superoxide dismutase and catalase activity, making it a powerful agent in reducing oxidative stress.

The antioxidant, circulatory stimulant and uric acid removal actions of Gotu kola make it an important herb in any arthritis formula.

- **Celery**

Celery (*Apium graveolens*) increases elimination of urates from the kidneys, and assist in Gout – an arthritic disease caused by an accumulation of urate crystals at the joints. Celery may also reduce inflammation around the joint.

Celery contains over 26 anti-inflammatory compounds. Celery has the ability to inhibit xanthine oxidase, the enzyme needed in the last step when purines are converted to uric acid. Celery contains apigenin, a flavonoid known to inhibit the enzyme.

Both Celery and Gotu kola are well documented, scientifically verified herbs.

Please refer to the numerous scientific studies on these two herbs.

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PAIN EZE ARTHRITIS NATURAL FORMULA

Scientifically validated and tested by The University of Western Sydney, Australia

What is more effective? Glucosamine Hydrochloride or a Glucosamine-Chondroitin complex?

People with osteoarthritis who take combinations of chondroitin and glucosamine with the suggestion that the combination of these ingredients will give more effective benefits are wrong, according to a study published by the Memorial University of Newfoundland, Canada.¹

Although the idea of taking two nutritional supplements to treat the symptoms of osteoarthritis may sound appealing, and may be harmless, it is based mainly on anecdotes and hypotheses.² The theory that Glucosamine and Chondroitin work synergistically in the treatment of osteoarthritis is incorrect. Rather, taking glucosamine on its own has shown to reap the greatest benefits.

For example, in the study by Blakley¹ (figure A) Glucosamine is shown to be not only the most popular, but the most effective supplement for pain, stiffness and increased movement around the joints.

According to figure A, the combination of glucosamine and chondroitin has a less significant action, showing that the combination of the two is not as effective.

Preparations containing only Glucosamine take a longer time to produce results (6-8 weeks). **When Glucosamine is coupled to the co-factor manganese, the results are quicker as the body is able to convert glucosamine to glucoaminoglycans, the building block of cartilage. This means the therapeutic response is much faster. In some patients this can be within 2-3 weeks.**

Glucosamine Hydrochloride delivers over **83%** of the active ingredient for cartilage rebuilding action, while Glucosamine Sulphate delivers only 59% of active Glucosamine.

How does Ibuprofen compare to the efficacy of Glucosamine Supplementation?

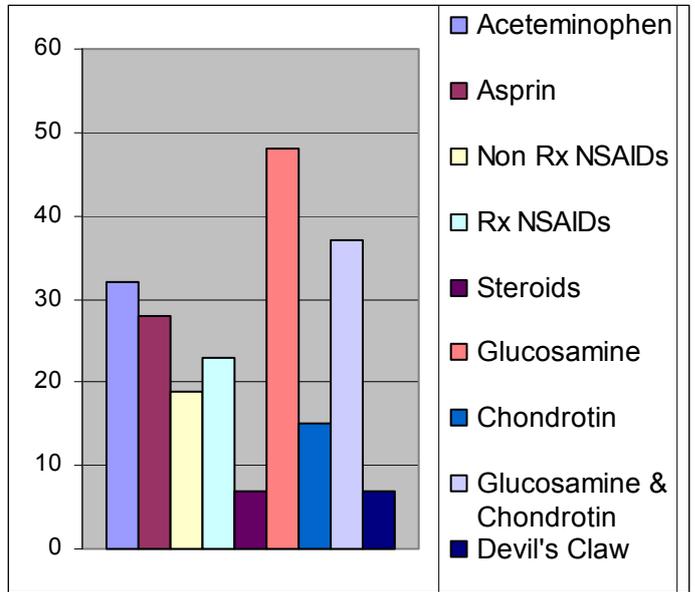


Figure A. Conventional medicines and supplements used to treat osteoarthritis¹

Glucosamine and Ibuprofen have been compared in numerous clinical trials. Results of these trials reported in the British Journal of Community Nursing show that Glucosamine has similar efficacy to Ibuprofen, with out the unwanted side effects of long term anti-inflammatory therapy. In practice Glucosamine can be used as an alternative to anti-inflammatory drugs and analgesics or as a useful adjunct to standard analgesic therapy.³

What other features are important in a Glucosamine Supplement?

1. The TYPE of Glucosamine

It is important to use the Hydrochloride form of Glucosamine. Glucosamine Hydrochloride is more absorbable by the body and contains higher concentrations of active Glucosamine within its structure. Since conditions such as osteoarthritis result from an imbalance between the rate of synthesis and the rate of degradation of cartilage proteoglycans where degeneration exceeds synthesis, it follows that increasing the availability of Glucosamine will, in turn, increase the production of cartilage proteoglycans and, thus, potentially decrease joint pain and increase flexibility.

Glucosamine Sulphate complex contains approximately 25% potassium chloride in the formulation. Potassium is contraindicated in patients with renal failure and/or patients on ACE inhibitors (blood pressure medications).

2. The addition of Manganese

Manganese is a co-factor, required for Glucosamine to be adequately absorbed. It is important to make sure the Glucosamine supplement contains manganese.

3. The addition of Celery, Ginger and Gotu Kola

Gotu Kola, also known as Pennywort, is a well known natural remedy to assist pain relief and proper circulation of blood.

Ginger has been used for centuries for pain relief in musculoskeletal conditions. It is an excellent antioxidant and is known for its analgesic activity.

Celery may increase elimination of urates from the kidneys, and assist in Gout – an arthritic disease caused by an accumulation of urate crystals at the joints. Celery may also reduce inflammation around the joint.

Why prescribe Sunpab's Pain Eze Formula for your patients?

This University proven formula contains all the features of an effective Glucosamine supplement, with the inclusion of Glucosamine Hydrochloride, Manganese, Celery, Ginger and Gotu Kola in therapeutic concentrations.



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3. Ruane, R. & Griffiths, P., Glucosamine therapy compared to ibuprofen for joint pain, *British Journal of Community Nursing*, 2002; vol.7, no.3, 148-152.



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GLUCOSAMINE ANALYSIS

Report on glucosamine analysis in "Ruflex Arthritis" formula manufactured by Sunpab Health Products, Suite 36/3 Terminus St, Castle Hill, NSW 2154, Australia.

To: Sunpab Health Products
Date of receipt: 23rd October 2003
Date of Report: 20th May 2004
Product: Sun's Natural Nutrients *Ruflex Arthritis* Natural Formula
Batch Number 15305
Sent by: Consultant Pharmacist
Received by: Dr Cheang Khoo
Senior Lecturer in Chemistry
School of Science, Food and Horticulture
University of Western Sydney (Campbelltown Campus)

Result:

The above mentioned product was analysed for glucosamine content.

Analysis was carried out by high performance liquid chromatography (HPLC).

The label claims that each tablet contains:

Glucosamine Hydrochloride	750mg
Manganese Amino Acid Chelate	50mg
Gotu Kola (Centella Asiatica) herb	250mg
Ginger (Zingiber Officinale) rhizome	250mg
Celery (Apium Graveolens) seed	300mg
TOTAL:	1600mg

Twenty tablets were weighed and analysed for glucosamine hydrochloride content. The product claims a glucosamine hydrochloride content of 46.9% w/w (that is, 46.9 g glucosamine hydrochloride in 100 g of tablets).

Analysis showed the glucosamine hydrochloride content to be $44.2\% \pm 1.0\%$ which is just 2.7% outside the mean claimed value. The measured content of glucosamine hydrochloride are therefore close to the claimed value.

Yours sincerely,

Dr Cheang Khoo BSc, MChem, PhD, MRACI, CChem



TERMINUS ST. MEDICAL CENTRE
CASTLE HILL
 11/3-9 Terminus Street, Castle Hill, NSW, 2154

TO WHOM IT MAY CONCERN

I am a clinical research medical practitioner as well as a complementary health care practitioner at the Terminus St Medical Centre in Sydney.

In January 2004, I started prescribing a natural health supplement named Ruflex which consisted of the following natural ingredients:

Glucosamine Hydrochloride	750mg
Manganese Amino Acid Chelate	50mg
Gotu Kola	250mg
Ginger	250mg
Celery	300mg

Dosage schedule for up to 90kg – One tablet twice daily after food.

I was amazed at the quick onset of action of this product in alleviating arthritic pain, and within three weeks 80% of my patients were pain free and overall more mobile.

This prompted me to contact the distributor of this product in Sydney to seek their permission to carry out an independent double blind clinical evaluation of Ruflex tablets.

A double blind trial was set up by four of my Medical Practitioners at the above clinic and overall 1205 patients with unilateral osteoarthritis of the knee were chosen to compare the efficacy and tolerance of oral treatment Ruflex (natural) tablets to 1.2g of Ibuprofen daily over a period of 8 weeks.

Pain score with Ruflex was noticed within weeks and in some patients within days, and the most encouraging part of this trial was the absence of side effects with Ruflex tablets, whereas patients on Ibuprofen, in 45% of cases we had to stop treatment due to gastrointestinal problems.

There was significant mobility in Ruflex patients within 3 to 4 weeks, whereas the ibuprofen patients experienced mobility to a much lesser extent.

Objective therapeutic efficacy of Ruflex was rated by doctors as "excellent" in 59% of patients, "good" in a further 27% and "sufficient" in 14%.

Overall an 86% therapeutic efficacy in the management of Arthrosis rated "excellent or good" out of 1205 patients in the trial is exceptional for a natural arthritis formula with no side effects.

In conclusion I have found the therapeutic effect of Ruflex much more effective in treating arthritis than other monocomponent preparations consisting of only Glucosamine, which I have used in the past, before Ruflex was released on the Australian market. Once again I personally feel it is the synergistic effect of the ingredients in the Ruflex formula that makes it much more superior to other monocomponent Glucosamine preparations I have used in my clinic in the past.

Yours sincerely,

Dr. Raphael Panetta MBBS (Syd) MD (USA)
 Clinical Research Consultant

* *Ruflex* was renamed *Pain Eze* in June 2010. Some of our international distributors still use Ruflex as their trading name.

SUNPAB HEALTH PRODUCTS PTY. LTD.
PO Box 993
Castle Hill
NSW 1765

**RE: CARDIOVASCULAR RISK OF NONSTEROIDAL
ANTI-INFLAMMATORY DRUGS (NSAIDS)**

Recently there has been widespread media coverage regarding NSAID analgesics.

The link below contains the abstract for the recent article titled: "Cardiovascular Risk and Inhibition of Cyclooxygenase", found in the Journal of The American Medical Association, September, 2006.

This article discusses the increased risk of cardiovascular events (predominantly myocardial infarction) in patients on nonsteroidal anti-inflammatory drugs, such as diclofenac (Voltaren) therapy. These drugs are often used by patients suffering Osteoarthritis, Rheumatoid Arthritis and Ankylosing Spondylitis. Diclofenac is currently one of the highest prescribed NSAIDS in Australia, New Zealand and the USA. The Australian key investigators, McGettigan and Henry, claim that Diclofenac has the highest cardiovascular risk of the traditional NSAIDS investigated, and therefore the ensuing media coverage has questioned the safety of the NSAID class of drugs.

Click on the following link:

<http://jama.ama-assn.org/cgi/content/abstract/296.13.jrv60011v1>

In October 2004, rofecoxib (Vioxx) was withdrawn from the world market due to its increased risk of cardiovascular events.

Due to the side effects of nonsteroidal anti-inflammatory drugs such as Voltaren, Naprosyn, Naprogesic, Nurofen and Celebrex, natural therapies for the treatment of arthritic pain are the safer and smarter choice. A product should contain natural cartilage rebuilding properties as well as anti-inflammatory properties.

Click on the following link for more information on clinically tested natural therapies for arthritis:

<http://www.sunsnatural.com/arthritis.php>

I appreciate if you could forward this to the relevant Medical Authorities in your country, and also I would like to assure you that Sunpab Health Products in Sydney Australia is currently exporting Pain Eze Arthritis Natural Formula to numerous countries overseas, and to date the safety profile of this formula is second to none.

Our latest clinical trial data speaks for itself, and I trust your Doctors and Pharmacists will prescribe Pain Eze Arthritis Natural Formula (Arthrostrong Special Formula in Hong Kong) with confidence in the management of osteoarthritis.

For those technically minded, the full article can also be accessed at:

<http://jama.ama-assn.org/cgi/content/full/296.13.jrv60011v1#BDY>

Thank you,

Andrew A. Kissun
Sunpab Health Products Pty. Ltd.
Sydney, Australia
<http://www.sunpab.com>

RECENT MEDIA COVERAGE

Research & Development Unit

February 2007

Sunpab Health Sydney, Australia

WITHDRAWAL OF VIOXX in AUSTRALIA

The withdrawal of Vioxx has attracted vast media coverage in Australia recently. Dr Danny Liew, Senior Lecturer in the departments of Medicine and Epidemiology and preventative medicine of Monash University stated that the withdrawal was justified based on the data on cardiovascular side effects of Vioxx. He stated, 'It was the consistency of data from a number of studies that really led to the withdrawal'.

CELEBREX (CELECOXIB RISK in AUSTRALIA)

The Adenoma Prevention with Celebrex (APC) Trial showed an increased cardiovascular risk for Celebrex in doses of 800mg a day or more.

NSAIDs safety

The University of Newcastle's research into the cardiovascular safety of NSAIDs concluded that NSAIDs had the same cardiovascular risk that Vioxx did which has now been withdrawn from Australia.

Reference:

Australian Pharmacist (2007), 'Arthritis Treatment in the media spotlight', vol 26(2): p. 163.

There is an increased risk of heart failure, myocardial infarction and resistant hypertension with some NSAIDs including those that are over-the-counter preparations. Individual risk needs to be assessed before patients consider taking NSAIDs and those with a history of myocardial infarctions, resistant hypertension or heart failure are strongly suggested to NOT TAKE NSAIDs in the treatment of arthritis and find an alternative method of treatment. If NSAIDs are essential they should be initiated and closely monitored by a doctor. Those at low risk of CV side effects of NSAIDs, can have NSAIDs if necessary but should opt for a low dose short term course.

Reference: LATTIMORE J (2006), 'Winning the battle, losing the war: cardiovascular risks of OTC NSAIDs', *The Australian Journal of Pharmacy*, vol 87: pp. 20-21.

APIUM GRAVEOLENS (CELERY): PAIN EZE

Research & Development Unit

Sunpab Health Sydney, Australia

GOUTY ARTHRITIS (GOUT)

Gout or gouty arthritis is a form of arthritis caused by the accumulation of uric acid crystals in the joints. Inflammation of the tissues around the joint also causes the skin to be swollen, tender and sore even if it is slightly touched.

Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) comparable to the glucosamine in Pain Eze are considered the best treatment for gout as they block prostaglandins which dilate blood vessels around the joint and cause the inflammation and pain of gout. The Celery component of Pain Eze is particularly important in fighting Gouty Arthritis.

CELERY

Plant Family: Umbelliferae/Apiaceae

Description: Apium is a strong-smelling, slender, erect biennial herb, up to 60cm tall, indigenous to Europe, the US, Asia and Africa in coastal areas, and extensively cultivated in the temperate regions of Europe and North America. It has shiny pinnate leaves and large toothed leaflets, the upper trifoliate and unstalked. The flowers are white, in four to twelve simple umbels in a compound umbel which is often opposite a leaf; there are no upper or lower bracts. The petals are small and entire with a small inflected point, and the fruits are very small and slightly compressed laterally. The flowering period is from June to August. There are several cultivated varieties which emphasise the size of the ribbed stem, and all varieties have medicinal properties.

Parts used: seed, aerial parts

Collection: The seed is collected when ripe in September, the herb at any time during the growing season.

Constituents: 1.5-3% volatile oil (containing the terpenes limonene and b-selinene, and phthalides); coumarins (seselin, osthonol, apigravin, celerin, umbelliferone); furanocoumarins (including bergapten), flavonoids (apigenin, apiin), phenolic compounds, choline, ascorbate, fixed oil, fatty acids and unidentified alkaloids.

Actions: diuretic, mild spasmolytic, carminative, anti-inflammatory, antirheumatic, urinary antiseptic.

Indications: rheumatism, arthritis, gout, inflammation

of the urinary tract. Specifically indicated in arthritis and fluid accumulation.

Therapeutics and Pharmacology: Apium is known as a diuretic and urinary antiseptic and has been used in the treatment of urinary calculi. It has a calming effect on the gut, and can be used in the relief of flatulence and griping pains. The phthalides are the constituents responsible for the antispasmodic, sedative and diuretic actions. Apium has a direct action on the kidneys, increasing the elimination of water and speeding up the clearance of accumulated toxins from the joints and so is of benefit in any oedematous condition that accompanies arthritis. Apium is also hypoglycaemic, and as such is helpful in diabetes; this action seems to involve a direct action on the pancreas and its production of insulin. Clinical studies in China have demonstrated a hypotensive action for the tincture, and this is accompanied by increased urine output. The flavonoid apigenin has exhibited significant anti-platelet activity *in vitro*.

Pain Eze contains 300mg of Celery in each tablet, with a twice daily dosage. This dosage will assist the body in eliminating excess fluid and uric acid crystals from the joints while reducing inflammation.

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CALCIUM & GLUCOSAMINE FORMULATIONS: INTERACTIONS WITH MEDICINES

Research & Development Unit

Sunpab Health Sydney, Australia

Calcium supplementation has the potential to interact with a number of prescription and over-the-counter medications.

At present some glucosamine products (eg. GlucosoCAL) also include calcium in their formulations. The preparations should not be taken within one to two hours of taking prescribed or over-the-counter medications due to the possible adverse effects.

The question remains as to what effect calcium has on glucosamine bioavailability in these formulations if it has adverse effects on the bioavailability of other medications. However this can only be determined on a therapeutic level, little studies have been done on the effect of calcium on glucosamine to form glucoaminoglycan – the building block for cartilage formulation.

Medicines that have the potential to interact with calcium supplementation include:

- o Digoxin
- o Fluroquinolones
- o Levothyroxine
- o Antibiotics in tetracycline family
- o Tiludronate disodium
- o Anticonvulsants such as phenytoin
- o Thiazide, type of diuretic
- o Glucocorticoids
- o Mineral oil or stimulant laxatives
- o Aluminium or magnesium containing antacids

Calcium supplements may decrease levels of the drug digoxin, a medication given to heart patients. The interaction between calcium and vitamin D supplements and digoxin may also increase the risk of hypercalcemia. Calcium supplements also interact with fluoroquinolones (a class of antibiotics including ciprofloxacin), levothyroxine (thyroid hormone) used to treat thyroid deficiency, antibiotics in the tetracycline family, tiludronate disodium (a drug used to treat Paget's disease), and phenytoin (an anti-convulsant drug). In all of these cases, calcium supplements decrease the absorption of these drugs when the two are taken at the same time.

Thiazide, and diuretics similar to thiazide, can interact with calcium carbonate and vitamin D supplements to increase the chances of developing hypercalcemia and hypercalciuria (elevated levels of calcium in urine). Aluminum and magnesium antacids can both increase urinary calcium excretion.

Mineral oil and stimulant laxatives can both decrease dietary calcium absorption. Furthermore, glucocorticoids

(for example: prednisone) can cause calcium depletion and eventually osteoporosis, when used for more than a few weeks.

When calcium citrate is taken with aluminium containing antacids (eg. Mylanta), the amount of aluminium absorbed into the blood stream may be increased significantly. This is a particular problem for people with kidney disease in whom the aluminium levels may become toxic. In addition, aluminium-containing antacids may increase the loss of calcium in the urine.

Taking calcium with a beta-blocker (such as atenolol blood pressure medication), a group of medications used for the treatment of high blood pressure or angina, may interfere with blood levels of both the calcium and the beta-blocker. Study results are conflicting, however. Until more is known, individuals taking atenolol, or another beta-blocker, should have their blood pressure checked before and after adding calcium supplements or calcium containing antacids to their medication regimen.

Similarly, it has been reported that calcium may reverse the therapeutic effects as well as the side effects of calcium channel blockers (such as verapamil) often prescribed for the treatment of high blood pressure. These study results are also controversial. People taking verapamil or another calcium channel blocker along with calcium supplements should likely have their blood pressure checked regularly.

These adverse effects should be known community wide especially in regards to our elderly population whom are readily taking blood pressure and antacid medications of which calcium interacts adversely.

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Drug-Calcium interactions

Drug	Effect	Comment
Cardiac glycosides	Ca may potentiate toxicity	Administered concurrently, high dose Ca supplements can act synergistically with these drugs, which may induce arrhythmias and potentiate their toxicity. Use this combination with caution
Ca Channel blockers	Ca supplements can produce antagonistic effect to desired drug action	May precipitate the re-emergence of arrhythmias so patients should avoid high dose supplements unless under professional supervision
Tetracyclines	Ca can ↓ absorption of drug by 50%	Ca complexes with these antibiotics, necessitating a separation of doses by ≥ 2 hours
Thiazide diuretic	Drug ↓ urinary excretion of Ca	Caution when using thiazide diuretics in combination with high-dose Ca supplementation or concurrent vitamin D
Corticosteroids	↓ Ca absorption and levels	Both oral and long term inhaled corticosteroids can inhibit vitamin D mediated Ca absorption
Etidronate & alendronate	Ca appears to ↓ drug absorption	As Ca supplementation is important to prevent BMD loss, it should still be encouraged. Separate doses by ≥ 2 hours
Levothyroxine	Ca may ↓ drug absorption	Separate doses by ≥ 4 hours

Table 1: From J Comp Med vol. 6(2): p51

Potassium Chloride: Adverse effects & recent warnings

Research & Development Unit

March 2007

Sunpab Health Sydney, Australia

Recent warnings have been released in regards to the adverse effects of potassium chloride present in glucosamine products that consist glucosamine sulphate.

Potassium chloride is included in the formulation of glucosamine products that consist of glucosamine sulphate as their primary source of glucosamine. Potassium chloride aids in the uptake/absorption of glucosamine sulphate supplements as the sulphate from of glucosamine has poor absorption levels. In comparison glucosamine hydrochloride products are more readily absorbed by the body due to its ionic properties and therefore there is no need for the presence of potassium chloride.

The Pharmacy Guild has recently released a statement which cautions health practitioners on the use of glucosamine products in individuals with renal impairments and those which affect potassium levels such as diuretics, ACE inhibitors and Angiotensin II receptor agonists. The concern being it could lead to hyperkalemia.

Some people suggest the warning is alarmist given the small doses of potassium in glucosamine products however even though small they are still present in amounts that could affect the patients concerned above.

Cases of hyperkalemia are more likely to occur when a multi-drug regimen is embarked upon for hypertension management and in these cases potassium monitoring should be conducted on a regular basis.

In the review of such warnings TGA amended their listings for potassium chloride as follows (to be through legislation by May 2007 but excludes all products that are already on market and contain potassium chloride):

POTASSIUM CHLORIDE in oral preparations for human therapeutic use except:

- a. *when containing less than 600mg of potassium chloride per dosage unit;*
- b. *in preparations for oral rehydration therapy;*
- c. *in preparations for enteral feeding; or in preparations for bowel cleansing prior to diagnostic medical and surgical procedures.*

Potassium chloride has the potential to cause ventricular defibrillation or cardiac arrest and therefore consumers should to talk to their doctors before using a natural glucosamine supplement containing potassium chloride or instead **revert to glucosamine products that consist of the glucosamine hydrochloride form** (in the absence of potassium chloride).

References:

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PowerPoint Presentation: Pain Eze

Pain Eze™

Arthritis Joint and Bone Health

For the temporary relief of:

- chronic joint pain
- inflamed joints
- immobility, lock joints and joint

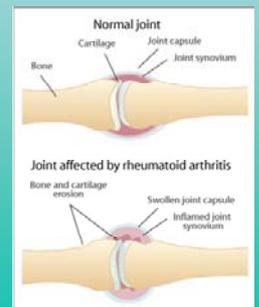
30 Capsules

MAY 11, 2008

May relieve arthritic pain & provide more flexibility to joints

Arthritis

- Group of conditions: *arthro* = joint, *itis* = inflammation
- Usually incurable
- Variety of symptoms including:
 - Stiffness
 - Pain
 - Inflammation
 - Swelling



Osteoarthritis

- Degenerative disorder
- Cartilage, synovial fluid affected
- Mostly affects “older” population
- Symptoms
 - Pain
 - Stiffness
 - Deformities
- No cure available

Osteoarthritis is different to rheumatoid arthritis

Osteoarthritis

Usually affects “older” age group

Characterised by pain and stiffness progressing to deformities

Symptoms start on one side of the body

Develops gradually

Rheumatoid arthritis

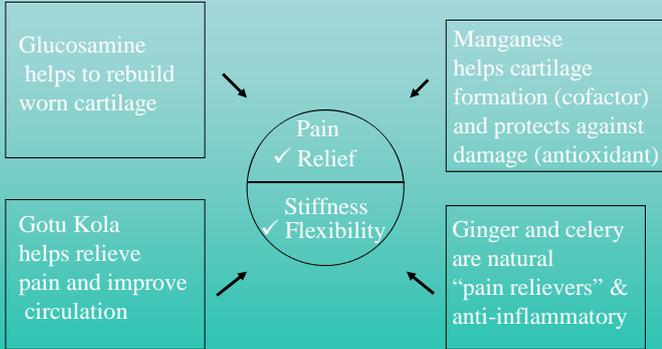
Can affect younger age 20-50

Characterised by pain, swelling, fever and other general symptoms

Symptoms start on both sides of the body

Intermittent attacks

How does Pain Eze work?



Why Choose Pain Eze?

Formula and effectiveness

- Pain Eze contains Glucosamine which attacks the “degeneration” and rebuilds cartilage, thus helping to reverse the disease
- Pain is relieved as cartilage rebuilding takes place and the joints move more freely
- Pennywort (Gotu Kola), Ginger and Celery are widely used “natural” pain relievers

Pain Eze gives more - than any other glucosamine formula in Australia

Pain Eze contains the purest & most bioavailable form of Glucosamine ...hydrochloride

Glucosamine Hydrochloride	Glucosamine Sulphate
99.1% purity	75-80% purity
No additives	Na or K chloride added
83.1% active glucosamine	59-63% active glucosamine

Benefits for the customer

PainEze provides temporary relief and may:

- Reduce pain and swelling associated with arthritis
- Help rebuild worn joints
- Decrease inflammation
- Assist in rebuilding cartilage damage
- Increases mobility

Pain Eze Product Comparison

BRANDS	Pain Eze	Vitabiotics Jointace 750
Glucosamine Hydrochloride (mg)	750	-
Manganese Amino Acid chelate (mg)	50	-
Gotu Kota (Centella Asiatica) herb	250	-
Ginger (Zingiber Officinale) rhizome	250	-
Celery (Apium Graveolens) seed	300	-
Glucosamine Sulphate	-	750

Glucosamine Hydrochloride assists in rebuilding worn cartilage, and to maintain healthy joints and mobility. **Pain Eze™** contains Glucosamine Hydrochloride, which is a stronger, more active form than other brands on the market, for cartilage rebuilding action.

Manganese speeds up the action of Glucosamine Hydrochloride to rebuild and protect against wear. It also helps protect against further damage by functioning as an antioxidant.

Gotu Kola may assist in pain relief and proper circulation of blood. Many pain medications have side effects. That's why people are opting for a natural and effective pain killer.

Ginger has been used for centuries to reduce pain in musculoskeletal conditions. Much scientific evidence has been documented on Ginger's ability to reduce pain in arthritis sufferers.

Celery may reduce the fluid build up around the joint that causes 'puffy' painful joints and restricted movement. Celery is excellent for the reducing the inflammation associated with arthritis and may also increase elimination of urates from the kidneys and assist in gout.





Natural Health Solutions

Mum-2-B™



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Clinical Update: Product Overview

What is Mum-2-B?

Mum-2-B Preconception, Pregnancy and Breast Feeding Formula has been developed by Pharmacists, Naturopaths and Health Care Professionals to provide essential nutrients to women prior to and during pregnancy, as well as while breast feeding.

How does Sunpab's Mum-2-B work?

Evidence suggests that by building up the right levels of nutrients in the body, both mother and baby will benefit. Adequate nutrient levels increases the chance of larger, healthier babies and fewer complications.

During pregnancy and breastfeeding, there are many physiological changes in the woman's body, particularly growth of the baby itself. This growth requires certain nutrients, for growth and development to occur for brain development, muscle and nerve function, bone development, eyesight and hearing.

What's in it?

- **Fish Oil**—DHA has been scientifically verified to optimise brain and retinal development in the unborn child and may improve cognitive development and have a direct effect on the child's intelligence, as DHA has an important role in development of synaptic processing of neural cell interaction and growth.
- **Iron** – The **iron** requirement of a woman more than doubles during pregnancy. This is due to increased red blood cell formation and foetal growth. Iron is also important for fatigue.
- **Copper** assists the body in absorbing iron and is required for the production of haemoglobin.
- **Folate** is essential for cells to grow, reproduce and divide. During pregnancy, the foetus is constantly growing and developing. An adequate supply of folate greatly reduces the risk of serious birth defects such as spina bifida. Folate does not stay in the body for long, therefore it is important to supplement daily.
- **Manganese** is an important mineral during rapid growth.

- **Zinc** also plays an vital role for growth, development and enzymatic reactions.
- **Vitamins B1, B2, B3, B5, B6 & B12** are essential and their main function is to assist in energy and stamina. B group vitamins help break down carbohydrates, protein, amino acids and lipids into energy. They are also important in hormone production, iron metabolism and maintaining the health and stress management capabilities of the nervous system.
- **Vitamin D** is important as it increases the absorption of calcium into the bones, ensuring a strong and healthy skeletal system for the foetus. If the mother is lacking in vitamin D, levels of calcium will also decrease. This causes the body to source it from the mother's bones in an attempt to increase serum calcium. This will then affect the mother's bone density and strength.
- **Calcium and Magnesium** are essential minerals, important not only for bone and teeth strength of the baby, but also for regulation of heart rate and muscle contraction. Calcium is also important to prevent osteoporosis later in life.
- **Phosphorus** is the second most abundant mineral in the body after calcium, and is very important for bones and teeth. It is a structural component of phospholipids which are found in every cell of the body.

The thyroid gland stores **iodine** in the body. Iodine is essential for the synthesis of thyroid hormones which are essential for foetal development, especially for the brain and nervous system. It is also essential for the development and growth of red blood cells, bones, hair, skin and nails.

How often do I take Sunpab's Mum-2-B?

One capsule daily with breakfast. Do not crush or chew.



Preconception, pregnancy & breastfeeding formula MUM-2-B: A Research Based Formulation

Why Recommend preconception, pregnancy & breastfeeding DHA-Max formula MUM-2-B?

- Sunpab pregnancy & breastfeeding DHA max formula is a quality pregnancy supplement which has been specifically formulated to provide 12 vitamins, 8 minerals and essential fatty acids necessary for maternal and infant health (Figure 1). These include:

Iodine

- Iodine is required for adequate thyroid function which is essential for the infant's normal cognitive development.¹ Recent literature highlights the re-emergence of iodine deficiency which may have adverse consequences, particularly during pregnancy.²
- A recent study displayed that 60% of pregnant women surveyed had low iodine levels.³ The national Iodine Nutrition Study completed in Australia 2006, highlighted that over 50% of Australian children also have low iodine levels.⁴

Folic Acid

- Supplementation with folic acid before and during pregnancy has been shown to significantly decrease the risk of neural tube defects.⁵

Polyunsaturated Fatty Acids

- Evidence emphasises the important role of polyunsaturated fatty acids (PUFAs), especially docosahexaenoic acid (DHA), play in maternal, foetal and infant health.⁶⁻¹²

Iron

- Iron requirements increase during pregnancy,¹³ reflecting the increased needs required for red blood cell formation and foetal growth.⁵
- High dose iron supplements (100mg iron per day) commonly cause gastrointestinal side effects, such as upper abdominal discomfort, nausea and constipation and can inhibit zinc absorption.

Vitamin D3 and Calcium

- Vitamin D is vital in building and maintaining healthy bones and muscles. It assists in the absorption of calcium and phosphate from the diet. It can be made by the skin when exposed to sunlight or come from the diet, however since increased awareness of the effects of sun exposure and campaigns to reduce exposure, studies have suggested that not enough Vitamin D is gained through the diet and sun exposure alone.¹⁴
- Adequate calcium intake is important for maintaining optimal maternal and foetal bone health.¹⁵

Phosphorus

- Phosphorus is the second most abundant mineral in the body after calcium, and is very important for healthy bones and teeth. It is a structural component of phospholipids which are found in every cell of the body.

Other micronutrients

- Pregnant and breastfeeding women have increased requirements of micronutrients such as zinc and magnesium¹³ which are essential for foetal and infant development in addition to maternal health.⁵

The potential role of DHA during pregnancy and infancy

- Increased maternal fish consumption is associated with reduced incidence of low birth weight and prematurity.¹⁰
- The WHO Expert Committee on Fats and Oils in Human Nutrition advocate the inclusion of PUFAs and related

Figure 1. Sunpab pregnancy & breastfeeding DHA max: A Research based formulation

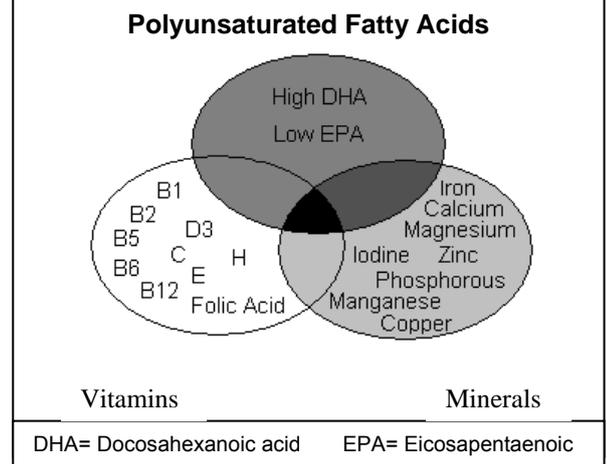
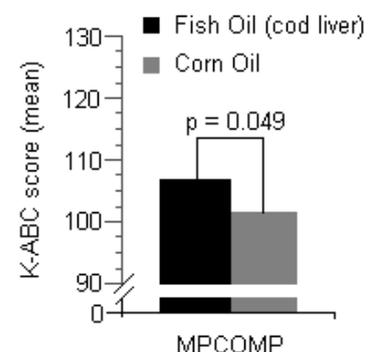


Figure 2. Maternal dietary supplementation with DHA during pregnancy and lactation improves cognitive function.¹¹



At 4 years, children whose mothers received DHA-rich fish oil supplements during pregnancy and lactation had significantly higher mental Processing Composite (MCOMP) scores in the K-ABC cognitive test than children whose mothers received corn oil. 10ml cod liver oil from week 18 of pregnancy to 3 months after delivery.

Preconception, pregnancy and breastfeeding formula MUM-2-B compared with Australian RDI and AI in pregnancy and lactation

				RDIs or AIs ¹³ (expressed as mean daily intake in 19-50yo women)		
Ingredient	Units	Per capsule	Women	Pregnancy	Lactation	
Polyunsaturated fatty acids	Omega-3 fatty acids:			Total Omega-3		
	DHA	mg	215	90	115	145
	EPA	mg	45			
Vitamins	Vitamin B1	mg	0.75	1.1	1.4	1.4
	Vitamin B2	mg	0.9	1.1	1.4	1.6
	Nicotinamide	mg	9.5	14	18	17
	Vitamin B5	mg	5	4	5	6
	Vitamin B6	mg	1.3	1.3	1.9	2.0
	Vitamin B12	mcg	2.0	2.4	2.6	2.8
	Folic acid	mcg	400	400	600	500
	Vitamin C	mg	50	45	60	85
	Biotin (Vitamin H)	mcg	30	25	30	35
	Vitamin D3 ^a	mg	6.25	5	5	5
	Vitamin E	mg	1.68	7	7	11
	Mixed carotenoids ^b (retinal equivalents)	mcg (RE)	3 (562)	(700)	(800)	(1100)
Minerals	Calcium ^c	mg	62.5	1000	1000	1000
	Phosphorus ^c	mg	72.82	1000	1000	1000
	Magnesium ^d	mg	50	310-320	350-360	310-320
	Iron ^e	mg	10	18	27	9
	Zinc ^f	mg	4	8	11	12
	Iodine ^g	mcg	164	150	220	270
	Copper	mcg	500	1200	1300	1500
	Manganese	mcg	500	5000	5000	5000

a. Vitamin D3 250IU (cholecalciferol)

b. As natural source *Dunaliella salina* extract equiv. to fresh cell 75mg

c. As calcium phosphate 168.92mg

d. As magnesium phosphate 50mg

e. As ferrous fumarate 32.02mg

f. As zinc aa chelate 20mg

g. As potassium iodide 164mcg

Indications

One capsule per day provides 12 vitamins, 8 minerals and polyunsaturated fatty acids including docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) at doses appropriate for pregnant and breastfeeding women.¹⁵

The daily dose provides the RDI for iodine during pregnancy which is important for an infant's normal cognitive development, hearing and vision.^{2,4} The capsules provide DHA, which occurs naturally in fish. Research suggests that supplementation with DHA during pregnancy and lactation may support optimal visual acuity and cognitive function.^{6,7,9-11} One capsule provides adequate intake of Vitamin D3.¹³

Contraindications and cautions

Contraindicated with conditions of iron overload. The

stated dose of folic acid should not be exceeded except with medical advice. Women who have had a child with a neural tube defect should seek specific medical advice.

Side Effects

None noted in literature at recommended dosage.

Presentation

Opaque, red-brown, unprinted, oblong-shaped, soft gelatin capsules in packs of 30.

Dosage and Administration

Adults- take 1 capsule, daily with food, or as professionally recommended

Storage

Store below 30°C in a dry place, away from direct sunlight.

Calcium: It's role in Pregnancy

Research & Development Unit

Sunpab Health Sydney, Australia

Calcium is an important nutrient before, during and after pregnancy for both the mum to be and child.

It is important that mothers get adequate amounts of calcium throughout pregnancy. Even though calcium absorption increases during this period, many pregnant women do not meet the recommended calcium requirements (Australian RDI = 1300mg for pregnant women and 1400mg for lactating women). Therefore supplementation may be beneficial.

Calcium is vital for nerve transmission, muscle contraction and healthy teeth and bones.

As mothers supply calcium to their baby for his/her skeleton it is important they have calcium rich foods or take a supplement as without calcium, babies draw upon the calcium in the mother's bones which can lead to weakened bones and potentially osteoporosis later in life.

Babies need good supplies of vitamin D and calcium to help form healthy bones and teeth.

Calcium deficiency during pregnancy can lead to bone metabolism (break down of bones), abnormal foetal growth (a reduction in foetal bone density) and hypertensive disorders.

Calcium toxicity (too much calcium) is not common but can lead to constipation and/or kidney stones. Calcium can also interfere with a number of prescription and over the counter drugs if excess is taken.

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DHA & Pregnancy

DHA is important during pregnancy. No significant adverse effects of DHA supplementation have been noted.

The importance of DHA during pregnancy and breastfeeding

Beth Vincent, MHS

When I was six months pregnant with my third child I noticed the letters "DHA" popping up on infant formula labels in the grocery stores. Then I noticed it on egg cartons and began to wonder, "What is DHA and why is it being added to these foods?" This is an important question to ask and the answer is noteworthy, especially for pregnant women. DHA (short for docosahexaenoic acid, an omega-3 long chain polyunsaturated fatty acid) is found in every cell in our bodies. It is critical for brain, eye and central nervous system development and functioning.

During pregnancy, developing babies rely on their mothers to get needed DHA. Since DHA is derived from the foods we eat, the content of DHA in a mother's diet determines the amount of DHA passed on to her developing baby. Unfortunately, the majority of pregnant women in the U.S. fail to get the recommended amount of DHA in their diets and DHA is not found in most prenatal vitamins. The good news is leaders in maternal health are beginning to educate women about the importance of DHA and some food manufacturers are starting to come up with creative ways to help people, pregnant and non-pregnant get the DHA they need.

Current research suggests adequate levels of DHA may help increase a developing baby's cognitive functioning, reduce the risk of pre-term labour and decrease the risk of postpartum depression. Consider the following:

- A 2003 study published in the journal *Pediatrics* showed children whose mothers took a DHA supplement during pregnancy scored higher on intelligence tests at four years of age than children of mothers not taking DHA supplements.
- A 2004 study published in *Child Development* found that babies whose mothers had high blood levels of DHA at delivery had advanced attention spans into their second year of life. During the first six months of life these infants were two months ahead of babies whose mothers had lower DHA levels.
- Other research studies suggest breastfed babies have IQs of six to 10 points higher than formula-fed babies. Medical and nutritional experts attribute this difference to the DHA infants receive while nursing.
- In a trial of women receiving DHA supplementation during the third trimester, the average length of gestation increased six days (*Obstetrics & Gynecology*, 2003).
- Research has found low levels of DHA in mother's milk and in the red blood cells of women with postpartum depression. (*Journal of Affective Disorders*, 2002). Some scientists believe increasing levels of maternal DHA may reduce the risk of postpartum depression.

Renowned figures speak out about DHA:

Research findings such as these have led pregnancy and child health experts to spread the word about the importance of DHA during pregnancy. Dr. William Sears, one of the nation's leading experts on child health and development and long-time advocate of DHA, states "DHA is the most important brain-building nutrient at all ages, *especially* during pregnancy and the pre-school years when the child's brain is growing the fastest." Dr. Sears hosts DHADOC.com, a web site providing information on the importance of DHA in infant and maternal nutrition. In light of research findings and what he calls "common sense," Dr. Sears recommends on his web site that pregnant and lactating women supplement their normal diet with 200 milligrams of DHA a day.

In what many consider the modern day pregnancy bible, *What to Expect When You are Expecting*, Heidi Murkoff, *et.al.*, devotes a section to the importance of adequate DHA in the pregnancy diet chapter of her book. She explains that DHA is important during pregnancy, "especially during the last three months, when your baby's brain grows at a rapid pace and lactation (the DHA content of a baby's brain triples during the first three months of life)." Another maternity expert, Rebecca Matthias, president of Mothers Work, Inc., the nation's leading maternity retailer touts the benefits of DHA in her latest book, *51 Secrets of Motherhood*. She celebrates DHA as "the new wonder supplement that actually increases your baby's growth."

It is difficult to get adequate amounts (to therapeutic effect) of DHA in your diet:

Why do pregnant and lactating women, who so critically need DHA, find it difficult to get the recommended amount of this from 220 mg to somewhere between 300 and 1,000 mg (depending on which expert you consult). Second, DHA isn't easy to get in your diet ? especially when you are pregnant. Significant amounts of DHA are found in animal organ meats and fatty fish.

Not the typical menu for most pregnant women! Liver does not hold mass appeal and we're told to limit our intake of fish due to concerns over toxins. No wonder a recent study of 112 pregnant or lactating women found that fewer than 2 percent met the FDA's current guidelines for adequate daily DHA consumption.

So what should pregnant women do to safely increase the DHA in their diets? A friend of mine began grinding flax seed onto her cereal every morning. Unfortunately putting flax seed on your cereal is probably a waste of time. Despite popular belief DHA is not found in flax seed. Flax seed (and green leafy vegetables) are sources of alpha-linolenic acid which may convert to DHA, but the process is inefficient and according to some experts may not happen at all. Alternatively you might choose to eat some of the "safer" fish choices such as pollock, haddock and cod. But according to Dr. Barbara Levine, associate professor of nutrition in medicine at Weill Medical College of Cornell University, "the purest source of DHA is not the fish itself, but rather what fish consume: the ocean's vegetarian plant algae. Taking DHA supplements produced from marine algae is therefore a safe way for pregnant women to boost their fatty acid stores," Levine says.

Martek Biosciences owns the technology that allows DHA to be manufactured from algae. DHA supplements made with Martek DHA are now available in health food and drug stores, as well as some maternity stores. If you don't want to take yet another pill, look for other foods fortified with Martek DHA.

As leaders in all areas of maternal and child health continue to speak out about the importance of DHA for pregnant women, we can expect to see more food manufacturers offering products fortified with DHA. It takes time, but the word gets out. As Dr. Levine states, "It took forever to get the message across about the importance of folic acid early in pregnancy, but now it is in our products and most women get what they need. Now we are trying to get the message out about DHA."

Thanks to perinatal health education efforts and thoughtful manufacturing today's mothers-to-be and new moms can ensure their babies get the DHA they need to thrive. DHA is critical for developing babies during pregnancy and lactation? The benefits of this fatty acid last forever.

Reference:

<http://pregnancyandbaby.com/pregnancy/baby/The-importance-of-DHA-during-pregnancy-and-breastfeeding-5726.htm>

The importance of DHA for pre-term and full-term infants cannot be overemphasized. Studies suggest that infants receiving supplemental DHA in their infant formulas scored significantly higher in mental development, as gauged by memory, problem solving, and related skills. DHA is also essential for the development of the brain and eyes in infants and has shown benefit in vision studies. Physicians stress that pre-term infants should be supplemented with DHA since these infants are often incubated and not breast-fed. It is also important that mothers breast-feeding their infants be educated about the importance of obtaining optimal intakes of DHA. DHA may also help ease the symptoms for women who experience painful menstruation.

Pregnancy/Breast-Feeding: To date, the medical literature has not reported any adverse effects related to fetal development during pregnancy or to infants who are breast-fed. Yet little is known about the use of this dietary supplement while pregnant or breast-feeding. Therefore, it is recommended that you inform your healthcare practitioner of any dietary supplements you are using while pregnant or breast-feeding.

Reference:

<http://content.nhiondemand.com/psv/monoAll-style.asp?objID=100124&ctype=ds&mtyp=4>

DHA & Children

Studies suggest that children with attention deficit disorder (ADD) and attention deficit hyperactivity disorder (ADHD) may be deficient in DHA. However, DHA supplementation in ADHD individuals may not be as effective as once thought. People with schizophrenia may also be deficient and DHA has improved some of the symptoms associated with the disease. Other studies suggest that omega-3 fatty acids like DHA may exhibit mood-stabilizing properties in patients with bipolar disorder, also known as manic-depressive illness. Researchers found that bipolar mood disorder patients had lower levels of DHA than control subjects and that supplementation may be beneficial to the patients.

Age Limitations

To date, the medical literature has not reported any adverse effects specifically related to the use of this dietary supplement in children. Since young children may have undiagnosed allergies or medical conditions, this dietary supplement should not be used in children under 10 years of age unless recommended by a physician.

DHA & Adults

Aggression controlling affects of DHA in both children and adults no significant adverse effects

Toxicities & Precautions

Be sure to tell your pharmacist, doctor, or other health care providers about any dietary supplements you are taking. There may be a potential for interactions or side effects.

General

People who take supplemental DHA are advised to take additional antioxidants, especially vitamin E, to protect against free radical damage to DHA in the body.

Side Effects

People who take a fish oil form of DHA may experience belching that causes a “fishy” odour.

Pregnancy/Breast-Feeding

To date, the medical literature has not reported any adverse effects related to foetal development during pregnancy or to infants who are breast-fed. Yet little is known about the use of this dietary supplement while pregnant or breast-feeding. Therefore, it is recommended that you inform your healthcare practitioner of any dietary supplements you are using while pregnant or breast-feeding.

Age Limitations

To date, the medical literature has not reported any adverse effects specifically related to the use of this dietary supplement in children. Since young children may have undiagnosed allergies or medical conditions, this dietary supplement should not be used in children under 10 years of age unless recommended by a physician.

Reference: <http://content.nhiondemand.com/psv/monoAll-style.asp?objID=100124&ctype=ds&mtyp=4>

Vitamins in pregnancy can reduce infant cancers



Complementary Healthcare Council of Australia

Supplements Plus

A newsletter on health and wellness – www.chc.org.au – April 2007

The CHC is the peak industry body for complementary medicine in Australia. Contact us at chc@chc.org.au

Contents:

- Vitamins in pregnancy can reduce infant cancers
- High fat diet and stomach cancer
- Anti oxidant study flawed
- New Health Economics Study
- Vitamin C improves sperm count
- Vitex – Hormonal Herb
- Top 10 tips for a healthy heart

Vitamins in pregnancy can reduce infant cancers



A meta analysis by Canadian researchers of seven previous studies, published online by the *Journal Clinical Pharmacology and Therapeutics* found that taking multivitamins and folic acid during pregnancy can help a mother reduce her baby's risk of developing the most common childhood cancers by up to one half.

The study looked at international research encompassing tens of thousands of children and found that multivitamins fortified with folic acid could lower the chances of contracting brain tumours by 27 per cent, leukaemia by 39 per cent and neuroblastoma by 49 per cent.

It has been known for about 15 years that mothers could reduce the risk of their babies being born with Spina Bifida, a malformation of the spine, by as much as 80 per cent by taking folic acid prior to and during early pregnancy.

While the Ontario study concentrated solely on neuroblastomas, the international studies also looked at leukaemia and brain tumours. As well, they included multivitamins along with folic acid in their nutrient scope. The study concluded that supplementation with a folic-acid containing multivitamin may be a preferred method, but the authors also stated that further research would need to be done to determine which vitamins or minerals in the supplements were responsible for the lower cancer rates.

The Importance of Iodine during Preconception, Pregnancy and Breast Feeding

Research & Development Team

Sunpab Health, Sydney, Australia

Iodine is an essential nutrient and is therefore required during pregnancy and breast feeding. It is acquired solely from the diet or via supplementation and is an essential component of thyroid hormones which acts to conduct many of the body's chemical reactions so it can function adequately.

Children aged 1-8 require ~ 65 micrograms of iodine per day and during **pregnancy and breast feeding women require ~160 and ~200 micrograms of iodine per day** respectively in order to meet the needs of the body.

Despite an improvement in iodine consumption during pregnancy and breast feeding by both mother and child due to the increased availability and consumption of iodised salt, a high prevalence of iodine deficiency still remains in many developing and industrialised countries.

It is important to note that iodine deficiencies are highly prevalent in Asia, particularly in Southern Asia. Approximately 40% of children and 40% of adults within Asia have low iodine levels. The World health organisation reports that in fact 20- 60% of the worlds population has iodine deficiencies and/or has a goitre.

A goitre occurs due to the increased production of a particular thyroid hormone in an attempt to compensate for low iodine levels. This causes the thyroid gland situated in the neck area to become enlarged and may have further complications as a result.



References:

- International Council for Iodine Deficiency Website: <http://www.iccid.org/> [Accessed 13 January 2010]
- B. de Benoist, M. Andersson, B. Takkouche and I. Egli (2003), 'Prevalence of iodine deficiency worldwide', *The Lancet*, vol. 362, Issue 9398: pp. 1859-1860.
- MB. Zimmerman (2009), 'Iodine Deficiency', *Endocrine Reviews*, vol. 30, no. 4: pp. 376-408.

In addition to developing goitres, iodine deficiency can cause a multitude of diseases/conditions depending on the severity of iodine depletion.

Medical disorders/conditions that may result from iodine deficiencies include:

- Goitre
- Mental retardation
- Delayed brain development
- Increased infant and maternal death during pregnancy and when birthing
- Hypothyroidism

It is therefore important to take precautionary action in order to obtain sufficient amounts of iodine during pregnancy, breast feeding and in infancy to prevent the aforementioned conditions from potentially occurring.

A lot of iodine comes from food sources. A major source of iodine being seafood. Food fortification of salt, that is iodised salt, and of bread is apparent in many countries. However for various reasons including access to such foods some individuals find it difficult to obtain adequate levels of iodine on a day to day basis and thus supplementation should be considered.

A formula that includes iodine such as Sunpab's Mum-2-B preconception, pregnancy and breast feeding formula. It provides adequate amounts of iodine to supplement dietary intake and also provides added nutrients essential for adequate growth and development of infants during pregnancy and whilst breast-feeding.

Research suggests many pregnant women do not receive adequate amounts of iodine during pregnancy or whilst breast feeding. Choose a Pregnancy formula with iodine and added essential nutrients for optimal pregnancy outcomes.

R
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s

Iodine Deficiency

Professor Creswell Eastman (MBBS '65 MD '80)



2008 Alumni Award for Professional Achievement

Professor Creswell Eastman receives the Alumni Award for Professional Achievement for his internationally-recognised efforts in tackling iodine deficiency disorders.

Creswell began his career as a Research Fellow in Endocrinology at the Garvan Institute of Medical Research. He later took up the reins of the Department of Endocrinology and Diabetes at Woden Valley and Canberra Hospitals before going on to senior appointments at Westmead Hospital and the University of Sydney, where he became Clinical Professor of Medicine (Pathology) in 1990.

A ruling passion of Creswell's professional life is combating iodine deficiency, a condition which results in cretinism and goitre and poses a serious public health problem around the world. For over 25 years, he has made frequent trips to Tibet and China, directing major research projects into iodine deficiency disorders there as well as in Malaysia, Laos, Thailand, Vietnam, Cambodia Indonesia and Pacific islands. In 1985, he launched a major Australian aid effort to prevent the disorders in rural China. He also developed the concept for a national reference laboratory on iodine deficiency disorders in China and raised over \$1 million to establish it. Furthermore, Creswell has made a significant contribution to the issue through his consulting work for national governments and for AusAID, UNICEF, World Bank and the WHO and through his role as Deputy Chairman of the International Council for Control of Iodine Deficiency Disorders. His many appearances in the Australian media have also played a key role in raising the profile of the issue in the community. Creswell's stellar professional achievements have earned him a number of prestigious honours including a Member of the Order of Australia and the AMA Award for Excellence in Delivery of Health Care.

The Importance of Folic Acid in Preconception, Pregnancy & Breast Feeding

Research & Development Team

Sunpab Health, Sydney, Australia

Folic acid or Folate is essential for cells to grow, reproduce and divide.

During pregnancy, the foetus is constantly growing and developing.

An adequate supply of folate greatly reduces the risk of serious birth defects such as spina bifida and congenital heart defects.

Neural tube defects, an outcome of folic acid deficiency prior to and during pregnancy, are a group of abnormalities that occur in the spine or brain of the baby during pregnancy and can cause significant mental and physical disabilities.

Folate does not stay in the body for long, therefore it is important to supplement daily. Supplementation with folic acid before and during pregnancy has been shown to significantly decrease the risk of neural tube defects.

A time trend analysis carried out in Quebec, Canada displayed that public health measures to increase folic acid intake resulted in a decrease in the birth prevalence of severe congenital heart defects. Thus supporting the hypothesis that folic acid has a preventative effect on heart defects.

In fact, over the seven years following the public health campaign that had the aim to ensure 95% of women of child bearing age received 0.4mg folic acid per day with an additional 0.4mg per day for those planning a pregnancy by fortifying grain products, there was a 6% significant decrease per year in the prevalence of severe birth defects.

The recommended daily intake of folic acid is 400mg for women between the ages of 19-50 years old, 600mg per day during pregnancy and 500mg per day whilst breast feeding.

One capsule of Mum-2-B provides 400mg folic acid. Therefore in addition to folic acid being obtained through the diet an individual being supplemented with Sunpab's Mum-2-B should reach their daily requirements.

It is important to note that folic acid or folate can be found in the following foods:

- Green leafy vegetables like spinach & cabbage
- Broccoli
- Soy products including tofu
- Grain products like wholemeal flour, breads and cereals
- Nuts such as peanuts

A well known Cochrane meta-analysis also concludes that supplements of multivitamins or folate before pregnancy and during the first 2 months help protect against neural tube defects. However they also noted that multivitamins alone do not give protection against neural tube defects.

A formula that includes folic acid such as Sunpab's Mum-2-B preconception, pregnancy and breast feeding formula. It provides adequate amounts of folic acid to supplement dietary intake and also provides additional nutrients essential for adequate growth and development of infants during pregnancy and whilst breast-feeding.

Research suggests that many pregnant women do not receive adequate amounts of folic acid during pregnancy or whilst breast feeding—Choose a Pregnancy formula with folic acid and added nutrients for optimal pregnancy outcomes and reduce the risk of neural tube defect development.

References:

- Ionescu-Iltu R, Marelli AJ, Mackie AS, Pilote L (2009), 'Prevalence of severe congenital heart disease after folic acid fortification of grain products: time trend analysis', *British Medical Journal*, vol. 338: p. b1673.
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Obstetrics & Multivitamins

Obstetrics and multivitamins

Recent high-profile studies on prenatal multivitamin supplementation have suggested manifold benefits for neonatal health.

Paediatric cancer protection

Babies of pregnant women supplementing with multivitamins containing folic acid may have fewer congenital anomalies other than neural tube defects, suggests a Canadian study. It found orofacial clefts, limb deficiency, leukaemia, brain tumours and neuroblastomas also occur less frequently.

A systematic review and meta analysis of all published research was conducted by researchers from the universities of Toronto and Western Ontario, and The Hospital for Sick Children in Toronto, to assess the potential protective effects of prenatal multivitamin supplementation on several paediatric cancers. Seven case-control studies were eligible for inclusion.

The data suggest that prenatal supplementation with multivitamins containing folic acid reduced risk for paediatric brain tumours by 18%. Neuroblastoma and

leukaemia risk were reduced by 47% and 36%, respectively. However, different supplements contain varying amounts of nutrients so it was not known which component was responsible for the protective effects.

The researchers concluded that prenatal multivitamins containing folic acid appear to produce a significant protective effect on three common paediatric cancers. Since women considering pregnancy are advised to take folic acid supplements, they suggested folic acid plus multivitamins may be a preferred method.

Clin Pharmacol Therapeut 2007;81:685-91 ■

Better birth weights and size

Multivitamins should be considered for all pregnant women, authors of a major clinical intervention trial have recommended in the *New England Journal of Medicine*.

The Harvard School of Public Health and Muhimbili University College of Health Sciences in Dar es Salaam enrolled 8468 HIV-negative pregnant Tanzanian women in their second trimester, who were randomised to receive daily multivitamins containing B complex and vitamins C and E or placebo until birth. All women also received prenatal supplemental iron and folic acid.

At the end of the

study, the multivitamin supplementation significantly reduced the risks of low birth weight and size by 18% and 23%, respectively.

Multivitamins did not significantly affect risks of prematurity and foetal death but did modestly improve haemoglobin and CD4+ cell levels in the women six weeks after delivery.

NEJM 2007;356:1423-31 ■

Add folate for less cleft lip

Folic-acid supplementation during pregnancy reduces the risk of cleft lip, a recent Norwegian case-control study suggests. Norway has one of the highest rates of facial clefts in Europe and does not allow fortification of foods with folic acid.

Of the 300,000 women who gave birth during 1996-2001, 676 had a baby with an orofacial cleft. Of these, 88% participated in the study, and 763 women who had given birth within six weeks were randomly selected to act as controls. After analysis, folic-acid supplementation of ≥400 mg/day during the month before pregnancy and in the first two months of pregnancy was found to reduce the risk of isolated cleft lip (with or without cleft palate) by a third.

Multivitamin intake around conception was also modestly associated with a reduced risk of isolated cleft lip.

BMJ 2007;334(7591):464 ■



PowerPoint Presentation: Mum-2-B



How does Sunpab's Mum-2-B work?

Sunpab's formulation contains a combination of:

- Fish Oil (High DHA, low EPA)
- A range of B group vitamins
- Folic acid
- Vitamin C, D3 and Natural E
- Biotin
- Essential minerals such as iron, calcium, magnesium, phosphorus, iodine, zinc, copper and manganese



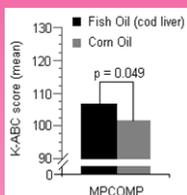
Why choose Mum-2-B?

- A quality pregnancy & breastfeeding formula that provides 12 vitamins, 8 minerals & essential fatty acids necessary for conception & maternal & infant health during pregnancy & breastfeeding
- Unique fish oil purification process
- Superior packaging - blister packed to prevent oxidation
- RDI of essential ingredients
- A more appropriate supplement as it contains DHA Fish Oil without the odour & fishy taste.
- Some brands do not contain fish oil at all.



The prime importance of DHA supplementation during pregnancy & lactation:

- Evidence suggests that supplementation with fatty acids rich in DHA may help improve visual acuity, neural & cognitive development of the newborn.



At 4 years, children whose mothers received DHA-rich fish oil supplements during pregnancy & lactation had significantly higher Mental Processing Composite (MCOMP) scores in the K-ABC cognitive test than children whose mothers received a placebo (corn oil)



Omega-3 Production Flow Chart



Essential Ingredients



Omega-3 DHA fish oil

- Contains a patented form of Omega-3 DHA fish oil with high DHA & low EPA, that is odourless, tasteless & well absorbed.
- Omega-3 intake may promote full term pregnancies and protect against preeclampsia (high blood pressure in pregnancy)
- It has also been found that children born to mothers supplementing with DHA have reduced levels of allergic immune responses.



Essential Ingredients cont'd



Iodine:

- Essential for synthesis of thyroid hormones & foetal development
- Essential for development & growth of red blood cells, bones, hair, skin and nails.

A recent Australian study suggested that 60% of the pregnant women surveyed had low iodine levels.

Folic acid:

- Supplementation has been shown to significantly decrease the risk of neural tube defects like spina bifida.
- Iron requirements double during pregnancy due to increased red blood cell formation & foetal growth. It may also aid in combating fatigue.



Essential Ingredients for healthy skin and bones

Vitamin D3 - is vital in building & maintaining healthy bones & muscles. It assists in the absorption of calcium and phosphate from the diet.

Calcium - important for maintaining optimal maternal & foetal teeth & bone health

Phosphorus - is the second most abundant mineral in the body after calcium, and is very important for healthy bones and teeth. It is a structural component of phospholipids which are found in every cell of the body.



Other Vitamins & Micronutrients in Mum-2-B

B group vitamins

- Assist in maintaining energy & stamina
- Important in hormone production, iron absorption & maintaining the health & stress management capabilities of the nervous system
- Pregnant & breastfeeding women have increased requirements for micronutrients such as zinc (vital role in growth & development & over 100 enzymatic reactions in the body) and magnesium (regulates foetal heart rate & muscle contractions)



How often do I take Sunpab's Mum-2-B?

One capsule each morning with breakfast

Additional Information

Always read the label. Take only as directed. For more information about pregnancy, breastfeeding and children's health, go to:

Sunpab Clinical Update



Mum-2-B Product Comparison

BRANDS	MUM-2-B (per capsule)	Vitabiotics Pregnacare (per tablet)	RDIs (expressed as recommended daily intake during pregnancy)
Fish Oil (mg)	500	-	
Omega 3 Triglyceride (mg)	✓	-	
DHA (mg)	215	-	
EPA (mg)	45	-	
Carotenoids (mg) ^µ	3	2	
Vitamins:			
B1 (mg) ^{§ µ}	0.75	3	1.4
B2 (mg) ^{§ µ}	0.9	2	1.4
B5 (mg) ^{§ µ}	5	6	5
B6 (mg) ^{§ µ}	1.3	10	1.9
B12 (mcg) ^{§ µ}	2	6	2.6
Nicotinamide/Niacin B3 (mg) ^{§ µ}	9.5	20	18
Folic Acid: B9 (mcg) ^{^ µ}	400	400	600
C (mg) ^{¥ µ}	50	70	60
Biotin (mcg)	30	150	30
D (mcg) [†]	6.25	10	5
Natural D-alpha-tocopherol: vitamin E (mg) ^{¥ µ}	1.68	4	7
Minerals:			
Calcium (mg) [†]	62.5	-	
Phosphorus (mg) [†]	72.82	-	
Magnesium (mg) [†]	50	150	
Iron (mg) [†]	10	17	
Zinc (mg) ^{†µ}	4	15	
Copper (mg)	0.5	1	
Manganese (mg)	0.5	-	
Iodine (mcg) [‡]	125	140	
Selenium (mcg)	-	30	
Vitamin K (mcg)	-	70	
Dosage No of Tabs/Caps per container: Flavourless & odourless	1 capsule daily 30's ✓	1 tablet daily 30's -	

DHA which is found in fish oil is essential in any pregnancy and breast feeding formula. DHA has been scientifically verified to play an important role in brain and eye development in the unborn child.¹ Did you know that up to 20% of the fatty tissue in a healthy child's brain consists of DHA?¹

The incorporation of Vitamin D, Phosphorus, Magnesium and Zinc aid in Calcium absorption and bone formation necessary for foetal growth and breast milk production²

B group vitamins help to maintain maternal energy levels and stamina³

Iodine deficiencies are a growing trend. Iodine supplementation may decrease the risk of maternal thyroid problems and adverse foetal outcomes such as delayed foetal mental development³⁻⁵

Vitamins C and E help to inhibit free radical formation and pre-eclampsia³

Iron is vital and may prevent maternal iron deficiency anaemia and delayed fetal psychomotor development.^{3,6}

Folic acid may prevent birth defects, namely neural tube defects⁷

Vitamins with anti-oxidant properties have been implicated as playing protective roles in the development and progression of many eye diseases including myopia, cataracts etc.^{8,9} Recent literature suggests a high incidence of myopia in Australia.



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Relevant references and Journal Articles

NUTRIENT(S) OF INTEREST	ALPHABETICAL ORDER OF ARTICLES
IRON, B-VITAMINS & OTHER MICRONUTRIENTS	ALLEN L (2005), 'Multiple micronutrients in pregnancy & lactation: an overview', <i>American Journal of Clinical Nutrition</i> , vol. 81(suppl): pp. 1206S-12S.
FOLIC ACID & MULTIVITAMINS	CZEIZEL AE (2004), 'The primary prevention of birth defects: multivitamins or folic acid?', <i>International Journal of Medical Sciences</i> , vol. 1(1): pp. 50-61.
VITAMIN D	DIAMOND TH, EISMAN JE, MASON RE, NOWSON CA & THE WORKING GROUP OF THE AUSTRALIAN & NEW ZEALAND BONE & MINERAL SOCIETY (2005), 'Vitamin D and adult bone health in Australia and New Zealand: a position statement', <i>Medical Journal of Australia</i> , vol. 182(6): pp. 281-285.
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ZINC	KREBS NF (1998), 'Zinc supplementation during lactation', <i>American Journal of Clinical Nutrition</i> , vol. 68(suppl): pp. 509S-12S.
MOST MINERALS & VITAMINS	LADIPO OA (2000), 'Nutrition in pregnancy: mineral and vitamin supplements', <i>American Journal of Clinical Nutrition</i> , vol. 72(suppl): pp. 280S-90S.
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Natural Health Solutions

Sugar BalanceTM



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Sugar Balance

Clinical Update: Product Overview

What is Sugar Balance?

Sugar Balance™ may assist in healthy blood sugar balance in healthy individuals.

Sugar Balance™ may also assist in:

- The suppression of sugar cravings
- Blood sugar/glucose metabolism in healthy individuals
- Weight loss support through the metabolism of foods
- To boost your energy levels through the metabolism of foods

What is in it?

Sugar Balance™ contains the following herbal ingredients:

- **Gymnema sylvestre (Gurmar)** – may reduce blood glucose in healthy individuals
- **Syzygium cumini (Jamun-Black Plum)** – may display a long term reduction of blood glucose in healthy individuals
- **Momordica charantia (Karela-Bitter Gourd)** —may improve glucose uptake by the liver
- **Trigonella foenum-graecum (Methi -Fenugreek Seed)**—may improve insulin sensitivity and decreases triglycerides while increasing HDL cholesterol

- **Pterocarpus marsupium (Vijaysar-Kino Tree)**—may reduce blood glucose levels—tannins reduce glucose absorption

All 5 ingredients have been traditionally used in Chinese and Ayurvedic (Indian) medicine to help balance blood sugar in healthy individuals.

What can Sugar Balance do for me?

- Reduce sugar cravings and assist in weight loss and lead a healthy lifestyle
- May balance blood sugar levels while giving a boost of energy

What are the special features of Sugar Balance?

- Contains 5 potent herbal ingredients in the convenience of one caplet
- May assist in weight loss and blood sugar balance—both current concerns for many Australians having problems with carrying extra weight and the food choices we make.
- Australian made and owned



Introduction

Diabetes is the world's fastest growing chronic disease with **one** person being diagnosed every 7 minutes.¹ It is the sixth major cause of death due to disease in Australia, in particular due to the complications associated with diabetes.² Three million Australians have diabetes or pre-diabetes and 246 million people worldwide have diabetes.³

Diabetes Mellitus is defined as hyperglycaemia due to absolute or relative insulin deficiency. Thus two types of diabetes exist; Insulin Dependent Diabetes Mellitus (Type I) and Non-Insulin Dependent Diabetes Mellitus (Type II).

Diabetes is a burden to individuals and health care systems worldwide, thus it is a vital target for prevention strategies around the world.

Mechanisms of Action

Sugar Balance™ is not a substitute for prescribed diabetes medications. It is a natural health food supplement that **may** be used to maintain healthy blood glucose control where by insulin and/or drug dosages may be altered. It is important that individuals work closely with their prescribing doctor and seek professional advice prior to taking this supplement.

Momordica Charantia (Bitter Melon)⁴⁻¹⁴

Momordica charantia, also known as bitter melon is a member of the Curcubitaceae family. Momordica has been shown to decrease hepatic glucose output⁴, increase peripheral glucose uptake and utilisation^{5,6}, decrease

intestinal glucose absorption⁴, increase insulin sensitivity^{5,6} and reduce both fasting and postprandial serum glucose levels⁴⁻⁷. Over 100 studies have authenticated its use in diabetes and its complications.⁵

All parts of the plant (fruit pulp, leaves, seeds & whole plant) have been shown to have antidiabetic properties mostly in animal models both diabetic and normal models.⁵ In 1998, fruit extracts of Momordica charantia were given to diabetic rats. The results displayed an increase in the amount of pancreatic beta cells in Momordica fed rats.⁴

A poly-herbal preparation, similar to Sugar Balance and containing bitter melon displayed a significant reduction in plasma glucose levels, glycosylated haemoglobin and an increase in plasma insulin levels and total haemoglobin in animals.⁶

Momordica contains phytochemicals; polypeptide-P (similar to insulin-like polypeptide), Charantin, Momordin Ic, oleanolic acid 3-O-monodesmoside, and oleanolic acid 3-O-glucuronide which have been shown to lower plasma glucose levels when injected like insulin into animal and/or patient models with non-insulin dependent diabetes mellitus when isolated from bitter melon.⁵

Scientific studies⁴⁻¹⁰ show that the mechanism of action of Momordica charantia is due to increased glucose uptake in the liver rather than increasing insulin secretion.

Few side effects have been noted and those that were noted were described as mild.^{5,11}

Momordica Charantia has shown promising effects in the prevention of diabetic complications including nephropathy, neuropathy, gastroapresis and cataracts.¹²⁻¹⁴

*Syzygium Cumini (L.) skeels/ Eugenia Jambolana Lam*¹⁵⁻¹⁹

Madeglucyl™ is a patented botanical derivative from the seeds of *Syzygium cumini* (L.) skeels, an edible plant, also called *Eugenia jambolana* Lam.

Madeglucyl™ alongside *syzygium cumini* has been thoroughly studied and been found to be devoid of side effects.

Its efficacy has been proven in studies from the USA,

Germany and Madagascar.¹⁵⁻¹⁸ Madeglucyl™ has the ability to maintain normal blood sugar levels in a variety of

conditions and its effect becomes apparent immediately from first dose. Glucose tolerance testing in rabbits, mice and rats show a 20-40% reduction in glycaemia and clinical testing indicates that Madeglucyl™ reduces plasma

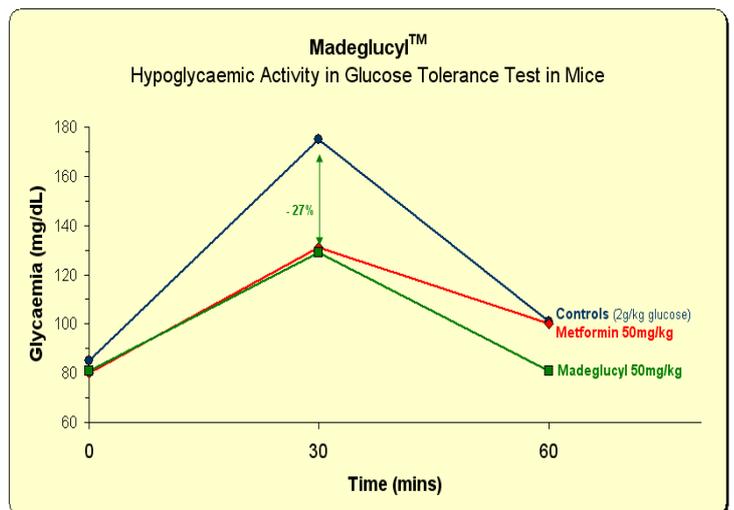
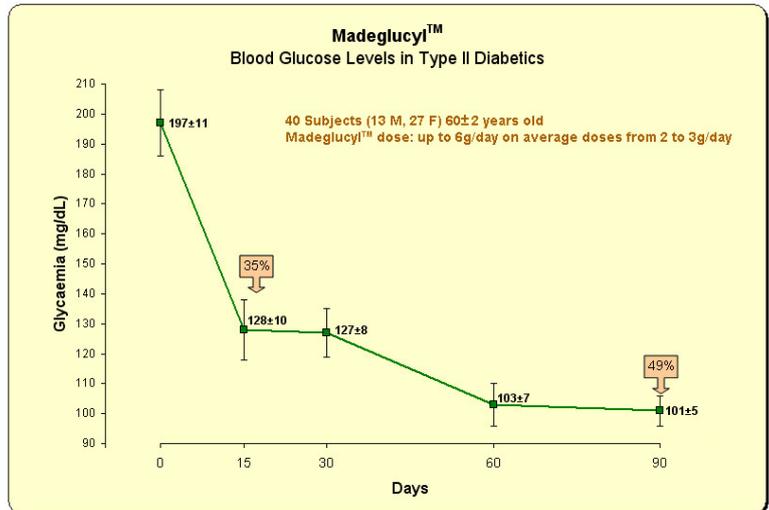
glucose levels by 35% (after 15 days) and 49% (after 90 days).¹⁵⁻¹⁸

The efficacy of Madeglucyl™ has been compared to the pharmaceutical drug Metformin. The study showed that both botanical and pharmaceutical drugs had similar

results. Oral treatment with 50mg/Kg of MADEGLUCYL™ reduced the peak of glycaemia by 27% in a Glucose tolerance test with mice compared to control group after a glucose load of 2g/Kg. Similar effects were reported with 50mg/Kg of Metformin.¹⁵⁻¹⁸

The hypoglycaemic activity has also been assessed in healthy volunteers. Three grams of Madeglucyl™ did not show any effect in normal condition (fasting glycaemia) while it induces a 21% fall in peak glucose level 60 min after a glucose load (Glucose Tolerance Test).¹⁵⁻¹⁸

Acute and sub-acute toxicological studies in rodents and chronic studies in rodents and rabbits have demonstrated the safety of Madeglucyl™ and certified the total absence of negative effects.¹⁹



Clinical trials confirm the following properties of Madeglucyl™: ¹⁵⁻¹⁹

- No hypoglycaemic effect in normal subjects
- ~20% reduction of blood glucose levels in healthy volunteers after glucose load
- ~40% reduction of blood glucose levels in type II diabetes patients
- Absence of hypoglycaemia as a side effect in type II diabetes patients
- Well tolerated even at high dosages
- In patients affected by type I diabetes Madeglucyl™ allowed the reduction of daily doses of insulin.
- In some cases an improvement in the renal function and of ocular complication has been observed in subjects treated with Madeglucyl™.
- When administered in combination with other diabetes therapy Madeglucyl succeeds in stabilising the glycaemia

Trigonella Foenum Graecum (Fenugreek)²⁰⁻²⁵

Trigonella foenum graecum, also known as Fenugreek has been used traditionally for its hypoglycemic effect. Several studies have shown its efficacy and results indicate significant reduction in blood glucose levels. A study by Sharma et al²² found that giving type II diabetic patients fenugreek seed powder over 24 weeks produced significant reductions to fasting blood glucose. It also improved glucose tolerance and levels of glycosylated haemoglobin were significantly reduced.

These experiments further suggest that Trigonella foenum graecum may increase the sensitivity of tissues to available insulin.

In 2004, a study²⁰ conducted on diabetic rats found that Trigonella foenum graecum seeds exhibited the ability to regenerate beta cells in the pancreas.

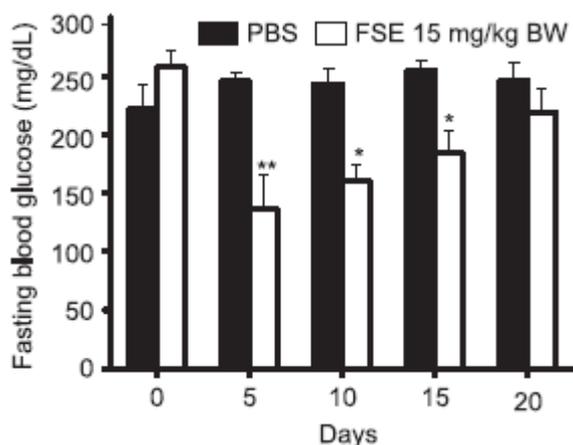
Table 1. Effect of Glucose levels on Fenugreek Treated Rats²⁰
Effect of treatment 0.1mg/kg body weight fenugreek seeds for four weeks.²⁰

	Control	Individual with diabetes	Individual with diabetes, treated with fenugreek	Individual with no diabetes, treated with Fenugreek
Glucose (mg/dL)	85	280	150	79

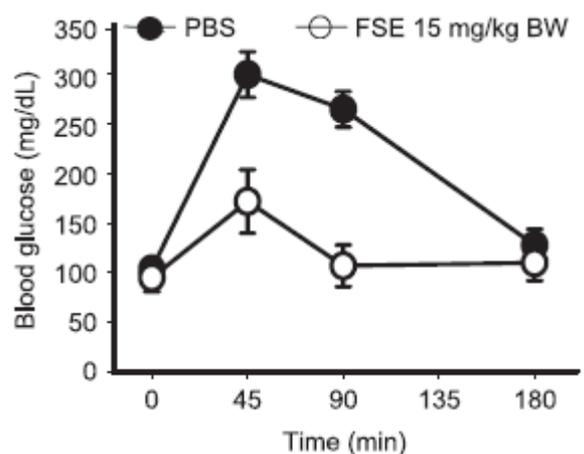
In insulin-dependent diabetic patients, a diet including Fenugreek significantly reduced fasting blood glucose levels and improved the glucose tolerance test. There was a 54% reduction in 24 hour urinary glucose excretion. These results concluded that fenugreek seeds were useful in the management of diabetes.²⁴

Fenugreek is thought to have insulin like activity in reducing plasma glucose levels by activating hepatic enzymes such as glucokinase and hexokinase and stimulating the insulin signalling pathway. Administration of Fenugreek seed extract (FSE) to diabetic mice displayed a reduction in hyperglycaemia on day 5 and the maintenance of euglycaemia for an additional 10 days. Even after a single dose of FSE 90 minute fasting blood glucose levels were significantly ($p < 0.05$) reduced compared to placebo (PBS). The acute administration of Fenugreek seed extract was similar to the plasma glucose reduction effects of insulin injections that were also examined.²⁵

Effects of multiple doses of FSE on fasting blood glucose over a period of days²⁵



Effects of a single dose of FSE on fasting blood glucose²⁵



Gymnema Sylvestre²⁶⁻²⁹

Gymnema sylvestre, also known as Gurmar, is a member of the Aclepiadaceae family and is used widely throughout South East Asia for its ability to increase glucose uptake and utilisation and improve function of pancreatic beta cells. The leaf when chewed is traditionally used to reduce the ability of taste buds to taste sweet.



A study²⁶ conducted in Madras, India administered Gymnema sylvestre to diabetic patients for 18-20 months as a supplement to their pharmaceutical drugs. During the trial, patients showed a significant reduction in blood glucose, glycosylated haemoglobin and glycosylated plasma proteins, and pharmaceutical drug dosage could be decreased. 22% of patients were able to discontinue their pharmaceutical drug and maintain their blood glucose homeostasis with Gymnema sylvestre alone.

Table 2. Biochemical parameters in Type II diabetic patients under gymnema sylvestre (GS₄) supplementation compared to those who continued on conventional therapy alone²⁶

Therapy	Duration	Fasting blood glucose (mg/dl)	Glycosylated Haemoglobin (HbA1c %)
GS ₄ Supplement (n=22)	Initial	174 ± 7	11.91 ± 0.30
	8-10 months	146 ± 6	9.71 ± 0.22
	18-20 months	124 ± 5	8.48 ± 0.13
Conventional drugs alone (n=25)	Initial	150 ± 4	10.24 ± 0.15
	10-12 months	157 ± 4	10.47 ± 0.14

Gymnema Sylvestre is thought to suppress the elevation of blood glucose levels by inhibiting intestinal glucose uptake.²⁸

In one study²⁹ 22 type I diabetes patients were given gymnema extract along with anti-hyperglycemic drugs. All patients demonstrated improved blood glucose control. Twenty-one were able to reduce their drug dosage considerably and five were able to discontinue their conventional medication and blood sugar control with the gymnema extract alone.

*Pterocarpus Marsupium (Vijayasar)*³⁰⁻³²

Vijayasar is a traditional Indian herb obtained from the bark of a tree. It is a natural supplement believed to have some unique features like beta cell protective and regenerative properties as well as blood glucose reduction actions.³⁰⁻³²

This herb contains many active components which have been vigorously studied for their hypoglycemic effects. Epicatechin, a flavanoid, found in the bark has shown hypoglycemic activity against diabetic induced albino rats. Blood glucose levels have dropped by 25% after oral administration in rabbits.³⁰

The Indian Council of Medical Research (ICMR)³¹⁻³² have clearly established Vijayasar's role as a safe therapy for type II diabetes mellitus after performing randomized controlled trials. The trials compared the blood glucose lowering effect of Vijayasar with a standard pharmacological agent, tolbutamide, in diabetes management whilst determining whether there were any adverse effects of the drug.

The trial consisted of three segments and involved newly diagnosed type II diabetes patients. The study was conducted over a 36 week period and involved 4 weekly clinical attendances for review.³¹⁻³²

Findings suggested there was no significant difference in the mean decrease of fasting or postprandial blood glucose. However 86% of Vijayasar and 94% of tolbutamide patients attained glycaemic control (<7.8mM fasting & 11.1mM postprandial blood glucose). Analysis of adverse effects revealed none to be specific to the trial drugs or botanicals.³¹⁻³²

Table 2. Mean blood glucose levels at baseline and at the end of treatment³¹⁻³²

Parameter	Drug Group	Blood Glucose (mM)		
		At Baseline	At 36 weeks	Mean fall (95% CI)
Fasting	Vijayasar (n=172)	9.4	7.0	2.4 [†] (2.2 - 2.7)
	Tolbutamide (n=177)	9.4	6.7	2.7 (2.4 - 2.9)
Postprandial	Vijayasar (n=172)	13.9	9.6	4.3 [†] (4.0 - 3.6)
	Tolbutamide (n=177)	13.9	9.4	4.4 (4.1 - 4.8)

CI = Confidence Interval

[†] Not significant compared to tolbutamide

It was concluded that vijayasar is effective in lowering blood glucose where by its glycaemic effect is comparable to tolbutamide, a standard pharmacological agent used in the treatment of diabetes mellitus, both being free from any significant side effects.³¹⁻³²

Sugar Balance™ Clinical Trials

Phase 1 clinical trials have been completed. Participants with diabetes were asked to take 1 tablet of Sugar Balance daily in addition to any current medication they were on. No other changes were made to their lifestyle apart from the inclusion of Sugar Balance and twice daily blood readings. The trial indicated significant decreases in HbA1c and no adverse effects were presented.

Phase II clinical trials are being commenced shortly.

Product Features and Benefits

- Each tablet contains: *Syzgium Cumini (L) Skeels* (Jamun), *Mormodica Charantia* (Bitter Melon), *Pterocarpus Marsupium* (Vijayasar), *Gymnema Sylvestre* (Gymnema), *Trigonella Foecum-graecum* (Fenugreek)
- Herbs included in Sugar Balance have been clinically trialled with each ingredient displaying improved blood glucose control.
- A natural supplement that can be used in conjunction with prescribed medications.
- No adverse effects noted in phase I trials.
- Phase II clinical trial results available soon.
- **Sugar Balance is not a substitute for your prescribed medications.**



Dosage Guidelines

Take one to two tablets swallowed whole (do not crush or chew) immediately before the two main meals or as directed by your health care professional.

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Get in control of your sugar intake with Sugar Balance

Research & Development Unit

Sunpab Health Sydney, Australia

Is your health suffering due to a poor diet?

The concerns facing Australians today:

Poor diet and the addiction to sugar. An ever increasing problem for all Australians as is being overweight or obese.

The reliance and saturation of sugar in your diet can be detrimental to your health as it can lead to serious illnesses and other medical complications.

Weight issues can also result from a poorly managed diet. Sugar addiction is a chemical addiction and therefore for those who may be unable to change their dietary habits a supplement such as Sunpab's Sugar Balance may be needed.

Sugar Balance is to be used in conjunction with other lifestyle changes to increase the management of sugar and food intake.

Sunpab is Australian made and owned and is able to help people with 5 natural herbal ingredients in a once daily caplet.

What Sunpab's Sugar Balance can do to help:

For those who that require assistance to reduce their sugar cravings, Sunpab's Sugar Balance may help to alleviate this and maintain a healthy blood sugar balance.

The benefits of Sunpab's Sugar Balance are extensive.

The reduction in appetite can lead to:

- Improve health and wellbeing
- Potential weight loss
- Reduction in the likelihood of serious illness
- Management of blood sugar levels
- Boost energy levels through the metabolism of foods



The best combination since ice-cream and chocolate

Sugar Balance and CardioZ join forces to create a combination of scientifically validated ingredients that may alleviate certain health issues and improve your health & well being

Research & Development Unit

Sunpab Health Sydney, Australia

Two of Sunpab Health's scientifically validated products; Sugar Balance and CardioZ have become a star couple when combined to combat health issues related to sugar balance and heart health. As issues with blood sugar levels often coincide with poor cardiovascular health, both of these products would compliment each other for better health and well being.

For those that have health concerns, or are overweight or obese, Sunpab Health offers a solution with two of their products; Sugar Balance and CardioZ. The main ingredients found within CardioZ have been scientifically validated to contribute towards heart health and healthy blood sugar balance.

The ingredients provide the best combination to combat certain health issues.

Ingredient	Benefit
Magnesium	It is common for people with blood sugar issues to have low levels of magnesium which commonly leads to painful muscular cramps and joint pain. CardiOz has magnesium in a bio-available form (amino acid chelate) to aid this deficiency.
Zinc	Current literature suggest a deficiency in Zinc may increase insulin resistance and . CardioZ contains 12.5mg of Zinc in a bio-available form (amino acid chelate).
Taurine	Taurine plays an important role in metabolism, and is found in the heart muscle, central nervous system and skeletal muscle.
Vitamin E	CardiOz has natural Vitamin E (150 IU) which is a fat soluble vitamin and a potent antioxidant. May assist diabetics who have cardiovascular and renal concerns.
Vitamin C and Grapeseed	CardiOz has both Vitamin C and Grapeseed, which are potent antioxidants used in the repair of vascular tissue and may assist those with circulatory issues.
B Group Vitamins	B1, B2, B5, B6 and B9(Folic Acid) and B12 may assist in improving heart health and healthy blood sugar balance.
Omega—3, 6 and 9 (EFA's)	Literature suggest supplementation with Omega-3, 6 and 9 may improve insulin sensitivity, increase HDL and decrease LDL cholesterol.
Coenzyme Q10	Is an important component to improve insulin sensitivity and increase cellular energy.
Lipoic Acid	Lipoic acid improves insulin sensitivity: antioxidant activity.
Milk Thistle	CardiOz contains 150mg of Milk Thistle. Is used to improve digestion and general liver function and a supplement of choice for fatty liver

Dosage:

Sugar Balance—one caplet twice daily, 15 minutes after two main meals.

CardiOz—one capsule in the morning with breakfast, do not crush or chew.

PowerPoint Presentation: Sugar Balance

Sugar Balance



What is Diabetes? Step By Step

1. When we consume food, it is converted into energy. Some foods (carbohydrates e.g. breads and cereals) are converted into energy in the form of sugar in the blood (glucose)
2. For this energy to enter the cells of our body, it needs insulin, as an "escort" to drive it into the cell. Kind of like a key that opens the doors to our body cells
3. Insulin is made by the pancreas. If the pancreas is functioning less effectively, cannot produce insulin at all or if the cell is resistant to insulin, then the energy (glucose) is unable to enter the cell through the insulin doors as there are not enough keys (insulin) or the keys don't fit properly.



What is Diabetes? Step By Step

4. If glucose cannot enter the cell, it remains in the blood & builds
5. Constant high blood glucose levels for a period of time leads to DIABETES.
5. High blood glucose levels over an extended amount of time causes major health implications. These include damage to eyes, nerves, blood vessels, kidneys and a higher risk of cardiovascular disease.



Who is at risk?

- You have had a heart attack or stroke
- You have heart disease
- You have Polycystic Ovarian Syndrome
- You are overweight
- You actively exercise less than three times a week
- You are apple shaped (more fat on abdomen and upper body)
- You have high blood pressure, high cholesterol and/or triglycerides

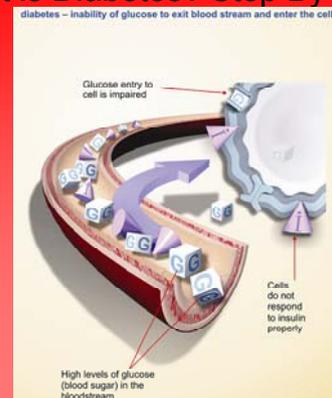


What is diabetes?

- Diabetes is a condition where the amount of sugar (glucose) in the blood is excessively high
- It is a disease that develops over time
- Diabetes occurs when the body is not producing enough insulin and/or not reacting to it properly.
- Type 2 diabetes, discussed later, is the most common form and is a lifestyle related disease that mainly occurs in those who are overweight, physically inactive or have a family history.
- Diabetes causes 5% of deaths globally every year



What is Diabetes? Step By Step



Who is at risk?

Do you fit in any of the following categories?

- Over 45 years old with high blood pressure OR overweight OR little physical activity OR family history of diabetes
- Over 35 years old and of Asian, Indian, Polynesian, Aboriginal, African, Hispanic or Southern European descent
- One of your parents or siblings have diabetes



What can we do to prevent diabetes?

- Ideally we need to consume a healthy, well balanced diet, as well as exercise at least three times a week
- How often do we do this?
- How often do we eat the recommended servings of particular food groups every day?
- With today's busy lifestyle we can often forget or not have time



What can we do to prevent diabetes?

- Sunpab's Sugar Balance taken each day can work as an insurance for the body.
- Insurance = a form of risk management (prevention) to avoid contingent loss
- In this case,
 - insurance* = Sugar Balance.
 - contingent loss* = all the problems associated with high glucose levels in the blood, including damage to eyes, nerves, blood vessels, increased risk of heart disease, kidney disease, circulatory problems and possibly death.



Who would benefit from Sugar Balance?

- Sugar Balance is not a substitute for prescribed diabetes medications. It is a supplement for maintaining healthy blood sugar control in healthy individuals, not only for diabetics, but also for those wanting to prevent onset of diabetes.
- Anyone who relates to one of the risk factors mentioned earlier may benefit from Sugar Balance.



What is in it?

Gymnema Sylvestre - Reduces blood glucose levels by improving pancreatic function and the subsequent production and secretion of insulin.



Momordica charantia – (Bitter melon – Karela) Reduces blood glucose levels by improving glucose uptake by the liver. British doctors designate it as 'plant insulin'.



Are there any side effects?

- Sugar Balance has been deemed safe and useful for the indications for blood sugar control in healthy individuals by the regulatory authority of Australia.
- During Phase 1 trials no adverse effects were reported.



Who would benefit from Sugar Balance?

- Anyone who identified with any ONE of the risk factors mentioned earlier.
- Do you know someone with diabetes? Do you identify with any of the risk factors? Most of us are affected by this disease, either directly or indirectly.



What is in it?

- Sugar Balance contains 5 carefully selected herbs which have been approved by the TGA for their use. These herbs have also been used for centuries in parts of Asia and have shown positive effects.
- Sugar Balance has undergone Phase 1 Scientific trials and showed a distinct blood sugar level reduction in diabetic patients. No side effects occurred with any of the participants.

What is in it?

(Syzygium cumini (L) Skeels [Madeglucyl] – (Jamun) Shows a prolonged decrease in blood glucose.



Fenugreek (Trigonella foenum graecum) - Improves insulin sensitivity. May have a beneficial effect on cholesterol and glucose levels.



Vijaysar (Pterocarpus marsupium) - Has insulin like actions and reduces blood glucose levels.



Can I take Sugar Balance with my multi vitamin or pharmaceutical medications?

- Sugar Balance contains approved ingredients which have all been clinically validated to display improved blood glucose control in healthy individuals.
- It can be used in conjunction with other herbals and pharmaceutical medications, but as with all medicines, your pharmacist, naturopath or doctor should be aware of what you are taking.





Natural Health Solutions

EyeMax™



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Clinical Update: Product Overview

EyeMax

What is EyeMax?

Sunpab Health's EyeMax™ is formulated to preserve healthy adult eye function and provide nutrients important to the macular region of the eye.

To maintain eye health, it is vital that we consume adequate vitamins through our diet and supplementation. Healthy eyes need adequate circulation, antioxidants and essential fatty acids to maintain adequate function.

What is in it?

EyeMax™ contains herbs such as Bilberry, Xangold and Eye bright as well as Fish Oil, antioxidants and minerals all in the one capsule.

Bilberry is high in vitamins A and C and may support the health of the eye and circulatory system by maintaining healthy connective tissue formation, strengthening the blood vessel walls in the eye, reducing inflammation, providing antioxidant activity and improving microcirculation.

Xangold is a unique formulation containing a mixture of carotenoids (Lutein and Zeaxanthin), which can assist in age related macular conditions. Zeaxanthin is important to protect the eyes from oxidative damage and ultraviolet radiation.

Fish oil with a high DHA content is also present due to its importance in the healthy development of the eye. Fish oil is also required for the carotenoids to absorb effectively into the eye. Eyebright

assists in strengthening eye tissues and providing elasticity.

Fish oil with a high DHA content is also present due to its importance in the healthy development of the eye. Fish oil is also required for the carotenoids to absorb effectively into the eye. Eyebright assists in strengthening eye tissues and providing elasticity.

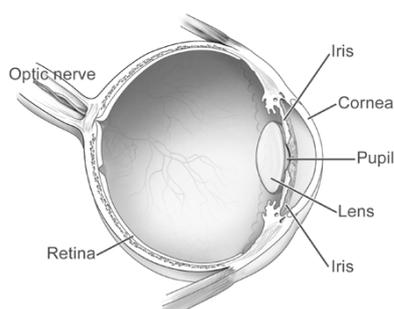
EyeMax™ also contains Vitamin A, C, zinc and copper in specific quantities which has been scientifically shown to prolong the progression of age related macular degeneration (Arch Ophthalmology 2001; 119:1418-1436).

What can EyeMax do for me?

- Reduce stresses on eyes caused by pollution, computer use and harsh sunlight
- Relieve visual fatigue
- Provide nutrients important to the macular region of the eye
- Reduce oxidative damage and chance of age related eye conditions
- People with eye health concerns due to abnormal blood sugar levels.

What are three special features of EyeMax?

- Contains Fish Oil which is essential for Lutein absorption for macular eye health
- Contains scientifically validated ingredients for eye health
- Australian made and owned



EyeMax comparison with other brands

EyeMax Scientifically Validated Ingredients:

- **Bilberry** is high in vitamins A and C and may support the health of the eye and circulatory system by maintaining healthy connective tissue formation, strengthening the blood vessel walls in the eye, reducing inflammation, providing antioxidant activity and improving microcirculation.
- **Anthocyanidins** (from standardised bilberry extract) is one of the group of active compounds in bilberry. They are known for their antioxidant properties and support for eye health.
- **Xangold** is a unique formulation containing a mixture of carotenoids (Lutein and Zeaxanthin), which can assist in age related macular conditions. Zeaxanthin is important to protect the eyes from oxidative damage and ultraviolet radiation.
- **Fish oil** with a high DHA content is also present due to its importance in the healthy development of the eye. Fish oil is also required for the effective absorption of carotenoids (Lutein) and adequate delivery into the macular region of the eye. Roodenberg et al. reported that Omega-3 fatty acid doubled the amount of Lutein absorbed from Lutein Esters. Dr Elisabeth

Comparative Table

Ingredients	Sunpab's EyeMax	Bausch + Lomb Ocuville	Bausch + Lomb Ocuville Adult 50+
Eyebright	40mg	-	-
Bilberry	1000mg	-	-
Lutein	-	2mg	6mg
Lutein Esters	25mg	-	-
Vitamin C	250mg	200mg	150mg
Copper	1mg	2mg	1mg
Natural Vitamin E	200iu	60iu	30iu
Zinc	40mg	40mg	9mg
Fish Oil	378mg	-	150mg
Vitamin A	1000iu (From Bilberry)	1000iu (Beta Carotene)	-
Vitamin D (Source: Fish Oil)	0.96iu	-	-
Zeaxanthin	160mcg	-	-
Selenium	-	55mcg	-
Dosage	1 daily	1 daily	1 daily

Comparative Table

- Johnson (Tufts University), reported there is no difference between the absorption of 6mg of Lutein from spinach and 6mg of Lutein supplements.
- **Eyebright** assists in strengthening eye tissues and provides elasticity to the nerve and optic fibres.
- **Zeaxanthin** is a carotenoid which is part of a large family of compounds found in fruits and vegetables that demonstrates antioxidant properties.
- **Vitamin A** is a powerful antioxidant essential for healthy eyes, skin and mucous membranes.
- **Zinc** is an essential trace mineral, zinc is used by the body in protein and carbohydrate metabolism and is an important factor in cell repair and healthy bone formation and support to the immune system.

EyeMax is a vital supplement for the following:

Students, office workers, cigarette smokers, diabetics, excessive exposure to sunlight and family history of AMD.

"The Age-Related Eye Disease Study 2 (AREDS2) is a multi-center, randomized trial designed to assess the effects of oral supplementation of macular xanthophylls (lutein and zeaxanthin) and/or long-chain omega-3 fatty acids (docosahexaenoic acid [DHA] and eicosapentaenoic acid [EPA]) on the progression to advanced age-related macular degeneration (AMD).

A dietary antioxidant supplement containing proven levels of certain vitamins and minerals appears to lower the risk of macular degeneration and other conditions in individuals. A study published in The American Journal of Ophthalmology (2001; 132:19-26).

Multivitamin (Antioxidant) highly recommended to be taken in conjunction with EyeMax is Sunpab Health's CardioZ.

Benefits of EyeMax

EyeMax is scientifically formulated to preserve healthy eye function and provide nutrients important to the macular region of the eye.

EyeMax is a vital supplement for the following people:

- **Students** – students spend many hours studying, focusing on small print, working in inadequate light or staring at screens which may harm the eyes over time and cause problems with vision.
- **Office workers** – people who work with computers all day or are exposed to long periods of fluorescent lighting.
- **Cigarette smokers** – destroys vessels in the eye and is a risk factor for Macular Degeneration.
- **Elevated levels of cholesterol** – high levels of cholesterol can cause cardiovascular disease and damage arteries and vessels, including the vessels of the eye. Diabetes can also cause Diabetic Retinopathy which can lead to blindness.
- **Excessive exposure to sunlight** – this can damage the central retina and also cause eye redness, discomfort and sensitivity to light
- The risk of eye problems including Macular Degeneration increases with age and a family history of the disease.

A dietary antioxidant supplement containing proven levels of certain vitamins and minerals appears to lower the risk of macular degeneration and other conditions in individuals. A study published in The American Journal of Ophthalmology concluded that:

'...dietary vitamin supplement use is associated with a reduced incidence of macular degeneration, nuclear and cortical cataract and could delay their onset.'
(2001; 132:19-26)

Healthy eyes need adequate circulation, antioxidants and essential fatty acids to maintain adequate function. EyeMax is formulated to preserve healthy eye function and provide nutrients important to the macular region of the eye.

Ingredients of Eye Max

EyeMax contains Bilberry, Xangold and Eye bright in a base of Fish oil.

- **Bilberry** is high in vitamins A and C and may support the health of the eye and circulatory system by maintaining healthy connective tissue formation, strengthening the blood vessel walls in the eye, reducing inflammation, providing antioxidant activity and improving microcirculation.
- **Xangold** is a unique formulation containing a mixture of carotenoids (Lutein and Zeaxanthin), which can assist in age related macular conditions. Zeaxanthin is important to protect the eyes from oxidative damage and ultraviolet radiation.
- **Fish oil** with a high DHA content is also present due to its importance in the healthy development of the eye. Fish oil is also required for the effective absorption of carotenoids and adequate delivery into the macular region of the eye.
- **Eyebright** assists in strengthening eye tissues and provides elasticity to the important nerve and optic fibres.

Macular Degeneration & Nutrition: AREDS vs. AREDS2

In 2001, the National Eye Institute, part of the National Institutes of Health, completed the Age Related Eye Disease Study (AREDS), which showed that ingesting high levels of specific nutritional supplements decreased the risk of macular degeneration (AMD) progression. This included 25,000 IU of beta-carotene, 500 mg of Vitamin C, 400 IU of Vitamin E, 80 mg of Zinc and 2 mg of Cupric Oxide.

While AREDS was the first study demonstrating benefit against this retinal eye disease, it failed to demonstrate improvement in vision. More recent studies, including the Lutein Antioxidant Supplement Trial, have demonstrated vision improvement, something AREDS could not. And much exciting work involving both Lutein and Zeaxanthin, molecules known as carotenoids, have shown not only vision improvement but also a healthier macular appearance.

Finally, there appears to be an inflammatory component to Age-Related Macular Degeneration. Hence, Omega-3 fatty acids, which are derived from deep sea fish, may be helpful in further counteracting this eye disease and preventing blindness.

Hence, the National Eye Institute, in late 2006 announced the recruitment of patients into a multi-year randomized Age Related Eye Disease 2 Study.

The Age Related Eye Disease Study 2 site states:

"The Age-Related Eye Disease Study 2 (AREDS2) is a multi-center, randomized trial designed to assess the effects of oral supplementation of macular xanthophylls (lutein and zeaxanthin) and/or long-chain omega-3 fatty acids (docosahexaenoic acid) [DHA] and eicosapentaenoic acid [EPA]) on the progression to advanced age-related macular degeneration (AMD). An additional goal of the study is to assess whether forms of the AREDS nutritional supplement with reduced zinc and/or no beta-carotene works as well as the original supplement in reducing the risk of progression to advanced AMD."

Find an AREDS2 Clinical Center.

CAROTENOIDS

Beta-carotene, Lutein and Zeaxanthin are all carotenoids. But some are both safer and more effective than the others.

ZINC OXIDE

AREDS showed that Zinc alone is a powerful antioxidant that fights macular degeneration. But how much is too much?

OMEGA-3 FATTY ACIDS

Most Western diets contain too many Omega-6 and Omega-9 Fatty Acids while being deficient in Omega-3 Fatty Acids. Learn about Omega-3's multiple health benefits.

EyeMax– Preserves Macular Health

Research & Development Unit

Sunpab Health Sydney, Australia

Healthy eyes

In today's world we place many stresses on our eyes. The harsh Australian sun, hours of computer use and pollution are just some. Problems with sight create a huge burden and limits life choices and opportunities. To maintain eye health, it is vital that we consume adequate vitamins through our diet and supplementation. Recent scientific studies have shown that particular herbs and nutrients assist in promoting healthy eyesight. Healthy eyes need adequate circulation, antioxidants and essential fatty acids to maintain adequate function. Sunpab's EyeMax is formulated to preserve healthy adult eye function and provide nutrients important to the macular region of the eye.

Common eye problems include macular degeneration, night blindness, dry eyes, cataract and vision problems such as long and short sightedness.

Who is most at risk?

People with the following conditions or characteristics are at risk for developing eye problems :

- Age - the risk increases with age
- Family history of macular degeneration
- Children
- Elevated levels of cholesterol
- Cigarette Smoking
- Light eye colour
- Excessive exposure to sunlight
- Diabetes
- Those who work at computers
- Students

How does EyeMax work?

Sunpab's EyeMax is formulated to allow healthy eye function and provide nutrients important to the macular region of the eye. It may assist with visual fatigue, eye strain and the strain caused by prolonged computer use. It contains herbs such as Bilberry, Xangold and Eye bright as well as Fish Oil, antioxidants and minerals all in the one tablet.

Bilberry is high in vitamins A and C and may support the health of the eye and circulatory system by maintaining healthy connective tissue formation, strengthening the blood vessel walls in the eye, reducing inflammation, providing antioxidant activity and improving microcirculation.

Xangold is a unique formulation containing a

mixture of carotenoids (Lutein and Zeaxanthin), which can assist in age related macular conditions. Zeaxanthin is important to protect the eyes from oxidative damage and ultraviolet radiation. Fish oil with a high DHA content is also present due to its importance in the healthy development of the eye. Fish oil is also required for the carotenoids to absorb effectively into the eye. Eyebright assists in strengthening eye tissues and providing elasticity.

EyeMax also contains Vitamin A, C, zinc and copper in specific quantities which has been scientifically shown to prolong the progression of age related macular degeneration (*Arch Ophthalmology* 2001; 119:1418-1436).

The most researched and commonly recommended nutritional supplementation for eye health include:

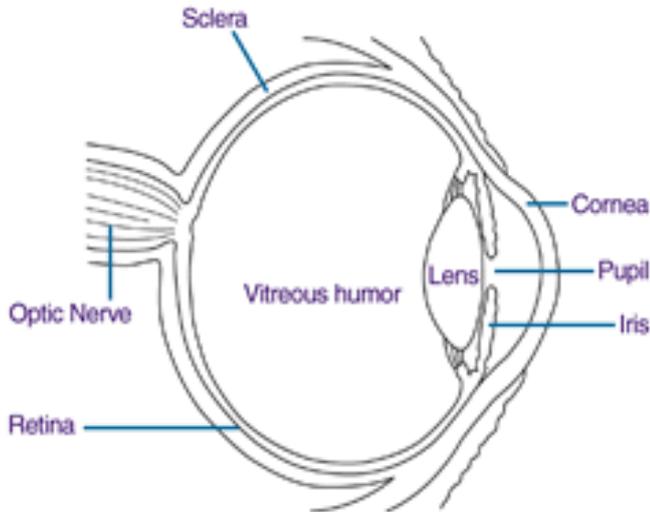
- Bilberry (*Vaccinium myrtillus*)
- Xangold Natural Lutein
- Fish Oil (Omega-3 fatty acids: DHA, EPA)
- Eyebright (*Euphrasia officinalis*)
- Vitamin C
- Natural Vitamin E
- Copper (cupric oxide)
- Zinc (zinc oxide)

Sunpab's EyeMax is formulated to preserve healthy eye function and provide nutrients important to the macular region of the eye. It may also:

- Relieve strain caused by prolonged computer use
- Relieve eye strain
- Relieve visual fatigue
- Assist the eye in adapting to variations in light intensity
- And protect the eye from harmful high energy blue wave light
- Assist in night vision

Science and Supplementation

A dietary antioxidant supplement containing proven levels of certain vitamins and minerals appears to lower the risk of macular degeneration in individuals. A study published in *The American Journal of Ophthalmology* concluded that dietary vitamin supplement use is associated with a reduced incidence of macular degeneration, nuclear and conical cataract and could delay their onset. (*Am J Ophthalmol* 2001:132: 19-26)



Sunpab's EyeMax has been specially formulated to deliver ingredients that have been scientifically verified in a sufficient dose to be of benefit.

Children and Eye Problems

Why are children at risk of developing eye problems?

- Family history of macular degeneration
- Excessive exposure to sunlight
- Excessive computer and TV use
- Diabetes
- Students

What is the dosage of EyeMax?

Adults: Take one capsule daily swallowed whole with food (do not crush or chew) as professionally prescribed. Always read the label. Use only as directed. Vitamins can only be of assistance if the dietary intake is inadequate.

A clinical trial involving 3640 participants was conducted by the US National Eye Institute, called The Age Related Eye Disease Study (AREDS). It was found that supplementation with zinc, copper, and the antioxidant vitamins A and E prolonged the progression of age related macular degeneration. The study showed that particular levels of these vitamins and minerals may reduce the risk of eye conditions such as vision loss. (*Arch Ophthalmology* 2001; 119: 1418-1436)

A Lutein Antioxidant Supplementation Trial was conducted in 2004 to examine the effects of Lutein supplementation and eye health. The study involving 90 participants found that Lutein supplementation may slow the progression of age related eye conditions by its effect on macular pigment density and central vision integrity. (*J Optometry* 2004; 75:216-30)



Diseases of the Eye & Supplements for Good Vision

A Broad Overview of Eye Diseases Affecting Australians: An evidence based perspective on Eye Health

Research & Development Unit

Sunpab Health Sydney, Australia

Age-Related Macular Degeneration (AMD)

AMD is a common cause of vision loss among people over age of 60, affecting central vision and rarely causing blindness. Although AMD can occur during middle age, the risk increases as a person gets older.

People in their 50s have about a 1-2 percent chance of getting AMD, and those over 80 have a 28 percent chance of developing AMD. (*AIHW 2005, Bulletin No. 27, Cat AUS60*)

Other risk factors for AMD include gender (women may be at greater risk than men), smoking (decreased risk in non-smokers), family history and cholesterol (high cholesterol increases risk).

Cataracts

A cataract is a clouding of the eye's lens that can cause vision problems.

The most common type of cataract is related to aging. The report by the *Australian Institute of Health and Welfare (AIHW)* found that almost 1.5 million Australians aged 55 or over suffered from untreated cataract in 2004, which represents 31% of that age group. 70% of Australians aged 80 or over have the disease.

A cataract will not spread from one eye to the other, although many people develop cataracts in both eyes. The cause of cataracts is unknown, although scientists have suggested several causes, including smoking, diabetes and excessive exposure to sunlight.

There are more than four types of cataracts: Age-related cataracts are the most common; congenital cataracts occur in infants or are developed during childhood; secondary cataracts are more likely to develop in people who have certain other health problems, such as diabetes, and may be linked to steroid use; and traumatic cataracts may develop after an eye injury.

Diabetic Retinopathy

Diabetic retinopathy is a potentially blinding complication of diabetes that damages the eye's retina. Diabetes causes damage to the blood vessels that nourish the retina, the seeing part at the back of the eye.

With early treatment, 90 percent of those with advanced diabetic retinopathy can be saved from going blind. All people with diabetes are at risk, both Type I (juvenile onset) and Type II (adult onset) diabetes.

Glaucoma

Glaucoma is a group of diseases that can lead to damage to the eye's optic nerve and result in blindness. Over 300,000 Australians have glaucoma. (www.glaucoma.org.au)

Closed-angle glaucoma occurs when the fluid at the front of the eye cannot reach the angle and leave the eye because part of the iris gets in the way. Secondary glaucoma can develop as a complication of other medical conditions.

Although anyone can get glaucoma, risk factors include family history, diabetes, migraine, short sightedness, high blood pressure, eye injuries and cortisone drug use.

Supplements for Good Vision

A dietary antioxidant supplement containing proven levels of certain vitamins and minerals appears to lower the risk of macular degeneration in individuals. A study published in *The American Journal of Ophthalmology* concluded that dietary vitamin supplement use is associated with a reduced incidence of macular degeneration, nuclear and cortical cataract and could delay their onset. Reference: Kuzniarz M, Mitchell P, Cumming R & Flood VM. Use of vitamin supplements and cataract: the Blue Mountains Eye Study. *Am J Ophthalmol* 2001; 132: 19-26.

There is also evidence from a randomised controlled trial that high-dose dietary supplements of

the antioxidants vitamin C, vitamin E, beta-carotene and zinc can reduce the risk of progression of macular degeneration and visual loss by about 20% compared with controls over 6 years.

Reference: Age-Related Eye Disease Study Research Group. A randomized, placebo-controlled, clinical trial of high-dose supplementation with vitamins C and E, beta carotene, and zinc for age-related macular degeneration and vision loss. AREDS Report No. 8. *Arch Ophthalmol* 2001; 119: 1417-1436.

Most researchers have pointed out; the key in nutritional supplementation is the dosage. Food supplementation acts by fortifying existing nutrients in the body. Knowing the exact dosage of each nutrient is what physicians specialising in nutritional medicine do. The most researched and commonly recommended nutritional supplementation for eye health include:

Alpha Lipoic Acid (ALA)

ALA is an antioxidant and is widely used in the prevention of various diseases such as age related macular degeneration. Due to its antioxidant properties ALA can penetrate eye tissue and protect both the lens and the retina from degeneration and also helps alleviate glaucoma. ALA reduces the incidence of cataracts in persons with diabetes by normalising blood sugar levels, therefore helping to prevent diabetic neuropathy. It does this by increasing nerve blood flow, reducing oxidative stress and improves distal nerve conduction.

Vitamins A, C, E, B1, B12 and B3

Several studies have found that vitamin C and E delay the development of cataracts. Researchers at the University of Sydney reported that supplementing with multivitamins especially with vitamin A and B complex also has a protective effect.

Thiamine (Vit B1) was found to lower the risk of nuclear cataract by 40% and the risk of cortical cataract by 30%. Folic acid and Vitamin B12 were found to be strongly protective against both cortical and nuclear cataract (40-70%) risk reduction. Reference: Kuzniarz M, Mitchell P, Cumming R & Flood VM. Use of vitamin supplements and cataract: the Blue Mountains Eye Study. *Am J Ophthalmol* 2001; 132: 19-26.

Long-term use of these vitamins has been proven to have a protective effect by reducing the incidence of both nuclear and cortical cataract in a study conducted by departments of Ophthalmology and Public Health and Community Medicine at the

University of Sydney.

Reference: Kuzniarz M, Mitchell P, Cumming R & Flood VM. Use of vitamin supplements and cataract: the Blue Mountains Eye Study. *Am J Ophthalmol* 2001; 132: 19-26.

Lutein, Zeaxanthin, Eyebright and Bilberry Investigators found that higher intakes of carotenoids (Lutein and Zeaxanthin) were associated with a reduced risk of wet (exudative neovascular) macular degeneration.

References:

Krinsky NI, Landrum JT, Bone RA. Biologic mechanisms of the protective role of lutein and zeaxanthin in the eye. *Annu Rev Nutr.* 2003;23:171-201. Feb 27, 2003

Gale CR, Hall NF, et al. Lutein and zeaxanthin status and risk of age-related macular degeneration. *Invest Ophthalmol Vis Sci.* 2003 Jun;44(6):2461-5

On April 7th 2004, the North Chicago VA Medical Centre issued a press release announcing that Lutein has been shown to not only prevent, but to actually reverse symptoms of age related macular degeneration. The data was published in the April issue of *Optometry- The Journal of American Optometric Association*. Stuart Richer, OD; PhD. Chief of optometry at the North Chicago VA Medical Centre and associate professor at the Illinois College Of Optometry, was quoted as saying that “Lutein in combination with a mixed antioxidant formula given to patients, showed significant improvements in several objective measurements of visual function including glare recovery, contrast sensitivity, and visual acuity vs. placebo in a trial of 90 AMD patients. Patients also experienced a 50% increase in macular pigment density relative to those on placebo.”

Eyebright is an antioxidant herb, rich in vitamins A and C. It also has the ability to strengthen and improve circulation in the vessels of the eye. It has been used throughout history as a herb to reduce irritation and inflammation in the eye.

Euphrasia officinalis (Eyebright) is used to strengthen eye tissues and provide elasticity to the important nerve and optic devices responsible for sight. Its chemical constituents regulate the tensile strength of all fibrous mass in the eyes, tightening or relaxing them as needed.

Reference: Heinerman J, *Science of Herbal Medicine*; Orem, Utah, 1979.

Bilberry contains high levels of tannic acid, cinnamic acids, flavonols, anthocyanidins, and isoflavones, making it highly beneficial to the eye.

The anthocyanidins in bilberry decrease vascular permeability.

Bilberry anthocyanidins interact with blood vessel collagen in such a way as to slow down enzymatic attack of the blood vessel wall. This may prevent leakage of capillaries, decreasing ocular pressure and relieving painful oedemas.

Reference: Robert AM, Godeau G, Moati F, Miskulin M. Action of anthocyanosides of *Vaccinium myrtillus* on the permeability of the blood brain barrier. *J Med.* 1977;8(5):321-32.

Fish Oil (Omega-3-fatty acids- DHA; EPA)

Lutein and Zeaxanthin absorb best when taken with fat. For maximum assimilation in to the bloodstream, take this supplement with the meal of the day that contains the most fat or fatty acid supplement such as fish oil.

Omega-3 fatty acids with high DHA content such as Tuna Oil may also offer some protection against macular degeneration. In a study of more than 3000 people over the age of 49, those who consumed more fish in their diet were less likely to have macular degeneration than those who consumed less fish.

Reference: Cho E, Hung S, Willet WC, et al. Prospective study of dietary fat and the risk of age-related macular degeneration. *Am J Clin Nutr.* 2001;73(2):209-218.

Another large study found that consuming docosahexaenoic acid (DHA) in particular quantities four or more times per week may reduce the risk of developing macular degeneration.

Reference: Christen WG, Ajani UA, Glynn RJ, Manson JE, Schaumberg DA, Chew EC, et al. Prospective cohort study of antioxidant vitamin supplement use and the risk of age-related maculopathy. *Am J Epidemiol.* 1999;149(5):476-484.

Xangold Natural Lutein

Xangold is a mixture of carotenoids sourced from marigold flowers (*Tagetes erecta*) including Lutein and Zeaxanthin. Investigations have found that higher intakes of Lutein and Zeaxanthin are associated with a reduced risk of wet (exudative neovascular) macular degeneration.

References:

Krinsky NI, Landrum JT, Bone RA. Biologic mechanisms of the protective role of lutein and zeaxanthin in the eye. *Annu Rev Nutr.* 2003;23:171-201. Feb 27, 2003

Gale CR, Hall NF, et al. Lutein and zeaxanthin status and risk of age-related macular degeneration. *Invest Ophthalmol Vis Sci.* 2003 Jun;44(6):2461-5

Xangold has a higher bio-availability in the body as it is a combination of carotenoids. The carotenoids protect the eyes from oxidative damage and ultraviolet radiation.

Lutein can prevent and reverse age related macular degeneration long before noticeable symptoms appear. It works by increasing the density of macular pigment. It may also protect the eyes by filtering out potentially damaging forms of light. Zeaxanthin is important to protect the eyes from oxidative damage and ultraviolet radiation.

Macular Degeneration, Cateract & the Benefits of Supplementation An Evidence based Perspective

Research & Development Unit

Sunpab Health Sydney, Australia

Macular Degeneration is a painless, degenerative eye disease that is the leading cause of blindness in persons over the age of 55 years while complete blindness does not occur in most people with the disorder; macular degeneration mainly affects central vision causing blind spots directly ahead. Macular degeneration often interferes with reading, driving, or performing other daily activities.

The prevalence of macular degeneration rises from 0.7% in the 65–74-years age group to 5.4% at 75–84 years and 18.5% in people over 85. (1) There are two forms of macular degeneration. Dry macular degeneration causes gradual loss of central vision, initially in one eye. Wet macular degeneration is twice as common as the dry type and involves a very sudden loss of central vision.

Signs & Symptoms

Macular degeneration is accompanied by the following signs and symptoms:

- Slightly blurred vision
- Dry type: a blurred spot in the central field of vision, which may become larger and darker.
- Wet type: straight lines that appear wavy and the rapid loss of central vision; sometimes wet macular degeneration starts with a sudden blind spot.

What Causes It?

Dry macular degeneration occurs from the breakdown of the light sensitive cells in the centre of the retina, called the macula. Wet macular degeneration occurs when new blood vessels behind the retina grow towards the macula and leak blood and fluid.

Cumulative oxidative stress plays a major role in the cause of macular degeneration as well as other risk factors such as smoking, obesity, hypertension, macro-vascular disease, raised cholesterol and fibrinogen levels, cumulative light exposure and cataract surgery. (2) (3)

Who is Most at Risk?

People with the following conditions or characteristics are at risk for developing macular degeneration:

- Age – the risk increases with age
- Cigarette smoking
- Family history of macular degeneration
- Cardiovascular disease
- Elevated levels of cholesterol
- Light eye colour
- Excessive exposure to sunlight
- Diabetes

References:

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Supplements for Good Vision: Eyebright (Euphrasia Officinalis)

Research & Development Unit

Sunpab Health Sydney, Australia

Eyebright (*Euphrasia officinalis*) is an antioxidant herb, rich in vitamins A and C. It is a small plant native to Britain and Europe that has been used since the 17th century. It has the ability to strengthen and improve circulation in the vessels of the eye and has been used throughout history as a herb to reduce irritation and inflammation of the eye as well as eyestrain.

Euphrasia officinalis is used to strengthen eye tissues and provide elasticity to the importdevices responsible for sight. Its chemical constituents regulate the tensile strength of all fibrous mass in the eyes, tightening or relaxing them as needed.

Reference: Heinerman J, *Science of Herbal Medicine*; Orem, Utah, 1979.

Eyebright has been used in connection with conjunctivitis and other eye conditions. Traditionally, it is used to give relief from redness, swelling, and visual disturbances due to eye infections.

Reference: Weiss RF. *Herbal Medicine*. Gothenburg, Sweden: Ab Arcanum, 1988, 339–40.

Some herbal texts suggest that the astringent actions of eyebright may reduce eye irritation while others suggest that eyebright may also have antibacterial actions topically.

Reference: HealthNotes, Available: <http://www.pccnaturalmarkets.com/health/Herb/Eyebright.htm>

Eyebright has been used for generations to support eye & vision health. It also helps nourish the entire eye and promotes healthy sensitivity to light. It helps to relieve inflammatory conditions of the mucous membranes and because of this it may be useful for a variety of conditions such as conjunctivitis, blepharitis (inflammation of the eyelids) and itchy, irritated eyes due to hay fever. It is astringent, anti-inflammatory, antiseptic and anti-catarhal (which makes it useful for noses as well as eyes!).
Reference: HealthyWay Magazine Online, Available: http://www.healthywaymagazine.com/issue37/05_.html

According to Hershoff and Rotelli, ant nerve and optic eyebright is effective for conjunctivitis or eye irritation and inflammation from pollutants, allergies, cold and flu, measles and other conditions. Eyebright can relieve the effects of eyestrain and bright lights, and has been known to soothe and

heal bloodshot, burning or itching eyes. In addition, eyebright can reduce light sensitivity, the presence of sticky eye gum and acrid yellow discharges. It is used both internally as a dietary supplement and as drops.

Reference: Hershoff A & Rotelli A (2001), 'Herbal Remedies: A Quick and Easy Guide to Common Disorders and Their Herbal Remedies'

Key constituents of Eyebright/*Euphrasia officinalis* include vitamin A, vitamin C, vitamin D, vitamin B complex, iron, silicon, iodine, copper, and zinc. Other ingredients of eyebright include flavonoids (rutin and quercetinannins), iridoid glycosides, essential fatty acids, glycoside aucuboside, caffeic and ferulic acids, sterols, choline, and a volatile oil.

The flavonoids in eyebright act as anti-inflammatory agents that can help relieve inflamed mucous membranes of the eyes, sinuses, and upper respiratory tract. The flavonoids in eyebright act as anti-inflammatory agents that can help relieve inflamed mucous membranes of the eyes, sinuses, and upper respiratory tract.

Reference: Vitamins & Health Supplements Guide, Available: <http://www.vitamins-supplements.org/herbal-supplements/eyebright.php> [25th January 2007]



EyeMax: AREDS STUDY

Research & Development Unit

Sunpab Health Sydney, Australia

The age related eye disease study research group did a randomised, placebo-controlled, clinical trial of a high-dose supplementation with vitamins C and E, beta-carotene and zinc for age-related macular degeneration and vision loss.

They indicated that observational and experimental data suggests antioxidant and or zinc supplements may delay the progression of age related macular degeneration and evaluated the effect of a high dose supplement on age related macular degeneration and visual acuity.

Eleven centres participated in the study and subjects (n= 3640) were identified as having at least one eye corrected visual acuity of 20/32 or better. Participants were randomly assigned a placebo or the high-dose vision supplement.

A 6-year follow up of the 3640 participants aged 55-80 was conducted, however 2.4% were lost to follow up.

Compared to the placebo the supplementation with antioxidants plus zinc displayed significant odds reduction (odds ratio OR = 0.72) as did just the zinc alone (OR = 0.75) and the antioxidants alone (OR = 0.75). Therefore both zinc and the antioxidants alone or in combination prolonged the progression of age related macular degeneration.

They concluded that people over the age of 55 should have regular eye examinations to determine their risk of developing age related macular degeneration. Those with extensive intermediate sized drusen in at least one eye should consider taking a supplement of antioxidants in addition to zinc without any contraindications.

Reference:

AREDS RESEARCH GROUP (2001), 'A randomized, placebo-controlled, clinical trial of high dose supplementation with Vitamins C and E, Beta-carotene, and Zinc for Age0Related Macular Degeneration and Vision Loss', *Arch Ophthalmol*, vol. 119: pp. 1418-1436.

ALPHABETICAL ORDER OF ARTICLES

- AREDS RESEARCH GROUP (2001), 'A RANDOMIZED, PLACEBO-CONTROLLED, CLINICAL TRIAL of High-Dose Supplementation with Vitamins C and E, Beta carotene, and Zinc for Age-Related Macular Degeneration and Vision Loss', *Arch Ophthalmol*, vol. 119: pp. 1418-1436.
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PowerPoint Presentation: EyeMax

Eye Max



Macular eye health

Increasing incidence of eye conditions

- Age-related Macular degeneration
- Cataracts
- Diabetic retinopathy
- Glaucoma



EyeMax

Who is at risk of developing eye problems?

Individuals that are:

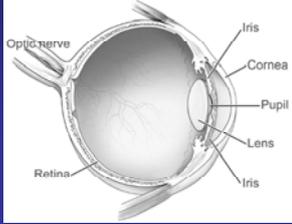
- Students
- Aged
- Smokers
- Exposed to excessive sunlight

OR have:

- Family history of macular degeneration
- Cardiovascular disease
- Elevated levels of cholesterol
- Diabetes

EyeMax

- Sunpab's EyeMax is formulated to preserve healthy eye function and provide nutrients important to the macular region of the eye.



EyeMax

EyeMax may:

- Relieve strain caused by prolonged computer use
- Relieve eye strain
- Relieve visual fatigue
- Assist the eye in adapting to variation in light intensity
- Protect the eye from harmful high energy blue wave light
- Assist in night vision
- All of which may lead to the before mentioned conditions over time

EyeMax

Ingredients such as

- Bilberry
- Xangold and
- Eyebright

Have been scientifically proven to assist in the ageing, tired or damaged eye.

- The fish oil base provides an effective delivery system of nutrients to the macular region of the eye

EyeMax

Other vital ingredients include:

- **Antioxidants** - added to promote healthy eyes and to protect the macula of the eye from free radical damage
- Omega-3 (DHA) – a compound found in high concentrations in the eye and brain



Natural Health Solutions

Hair Skin Nails™



Hair Skin Nails is also marketed as Beauty+ internationally

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Hair Skin Nails

Clinical Update: Product Overview

What is Hair Skin Nails?

Hair Skin Nails™ may assist in acquiring healthy, vibrant skin, strong nails and shiny, resilient hair.

This age defence formula provides a powerful source of antioxidants and nutrients that may help reduce the risk of premature ageing caused by free radicals.

Make Hair Skin Nails™ part of your health and beauty regime and notice the difference when you care from within.

What is in it?

Hair Skin Nails™ contains 16 researched ingredients. Grape seed, Vitamin E, C, zinc, alpha lipoic acid and selenium are powerful antioxidants required for the healing, growth and rejuvenation of hair, skin and nails.

Flaxseed Oil contains good fats which are very important for ageing skin and useful for healing. Also beneficial in acne and inflammatory skin conditions.

What can Hair Skin Nails do for me?

- Longer, break resistant hair and nails
- Ingredients to support hair growth
- Younger, supple, radiant skin
- Provide the body with antioxidants targeted to hair, skin and nail health
- Provide the skin with good fats to reduce lines and help prevent dry skin
- Assist with the reduction of pigmentation and scarring

What are three special features of Hair Skin Nails?

- Contains 16 researched quality ingredients to enhance beauty from within
- Contains antioxidants that assist in slowing down the ageing process
- Australian made and owned



Essential Nutrients for Healthy Hair, Skin & Nails

It is well documented that dietary bioactive compounds have beneficial outcomes on the skin. The delivery of such compounds has previously been based on their topical applications; however the trend of oral administration via supplements is on the rise.

Hair Skin Nails is one such oral formulation, containing many bioactive compounds including grapeseed, natural vitamin E, vitamin C, coQ10, betacarotene (natural source of carotenoids), zinc, selenium and flaxseed oil containing omega-3, 6 and 9; all of which have beneficial effects on the skin.

BIOACTIVE COMPOUNDS AND THEIR BENEFICIAL EFFECTS ON SKIN

Grapeseed (*vitis vinifera*) possesses regenerative and restructuring properties that help support epithelium cell structure and retain moisture in the skin. It has also been suggested that grape seed may aid wound healing and inhibit UVB oxidation of the skin.^{1,2}

When combined with **vitamin C**, **natural vitamin E** (d-alpha-tocopherol) may help prevent sunburn and reduce skin photosensitivity. However vitamin E supplementation alone appears to be ineffective.^{3,4}

Vitamin C is an essential antioxidant and cofactor in a number of enzymatic reactions. Vitamin C supplementation has been suggested to decrease the tendency to bruise and improve the appearance of aging or sun-damaged skin.^{5,6}

Betacarotene, as a natural source of carotenoids, is suggested to be phytoprotective that is protective against sun-damage, as is vitamins C and E.⁷

Selenium, has been suggested to play a role in skin cancer prevention, in particular UVB induced skin cancer.⁸

The combination of betacarotene, vitamin E and selenium has been shown to increase skin density, thickness and improve skin roughness and scaling, that is the combination is said to even out the skin.⁷

Coenzyme Q10 (Ubiquinone, CoQ10) has been shown to; reduce UVA-induced oxidation of the skin, prevent photoaging and reduce wrinkle

depth.⁹

Flaxseed oil is a rich source of **Omega-3, 6 and 9** essential fatty acids which are vital for healthy skin.^{10, 11}

More specifically **Omega-3** essential fatty acids have anti-inflammatory properties and help to reduce redness and skin irritation. They are also said to improve skin conditions such as eczema, rosacea, psoriasis and aid in wound healing.

Omega-6 forms a major component of the water resistance barrier of the skin and therefore helps promote healthy, supple and elastic skin.

Omega-9 is an essential component of phospholipids, which are important to the structure and function of cell membranes including the skin.

Zinc is well known for its important role in maintaining healthy skin. It protects the skin from UV radiation and enhances wound healing.¹²

Ultimately **Hair Skin Nails** provides all these essential antioxidants and nutrients for healthy skin in one daily tablet.

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PowerPoint Presentation: Hair Skin Nails

Hair Skin Nails



What is Hair Skin Nails?

- Hair Skin Nails™ may assist in acquiring healthy, vibrant skin, strong nails and shiny, resilient hair.
- This age defence formula provides a powerful source of antioxidants and nutrients that may help reduce the risk of premature ageing caused by free radicals.
- Make Hair Skin Nails™ part of your health and beauty regime and notice the difference when you care from within.



What is in it?

Hair Skin Nails™ contains 21 researched ingredients which include:

- Grape seed – tones and tightens skin
- Vitamin E – antioxidant and anti-inflammatory
- Vitamin C – allows for collagen synthesis and soaks up damaging free radicals
- Zinc – important in skin, hair & nail regeneration
- Alpha Lipoic Acid – moderate anti-inflammatory effect and antioxidant that may delay skin ageing
- Selenium – inhibits skin, nail & hair damaging UV free radicals and inflammatory markers
- Flaxseed Oil – contains the good fats that are important for ageing skin, dermal healing, acne and inflammatory skin conditions



What may Hair Skin Nails do for me?

- Gives you longer, break resistant hair and nails
- Ingredients to support hair growth
- Younger, supple, radiant skin
- Provides the body with antioxidants targeted to hair, skin and nail health
- Provides the skin with good fats to reduce lines and help prevent dry skin
- Assists with the reduction of pigmentation and scarring





Natural Health Solutions

CardiOz™



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CardiOz

Clinical Update: Product Overview

What is CardiOz?

CardiOz™ is a power packed multivitamin for peak performance. Vitamins, minerals and antioxidants catered for active people on the go who need to feel the daily boost of their multivitamin.

CardiOz™ provides a boost of natural energy, without the use of harmful energy drinks containing caffeine or other harmful substances which are bad for our health and have been heavily scrutinised by the medical profession.

Sometimes we do not eat the right amounts of protein or fresh foods such as veggies, grains and cereals that contain this natural energy. This is where CardiOz™ can be taken daily, to supplement the diet and give us the boost we need to perform, whether that be at home, in the office, at the gym or on the sporting field with its 21 carefully selected ingredients.

What is in it?

CardiOz™ contains 6 different types of B vitamins and CoQ10 which provide the cells with potent energy, naturally. The ingredients are in high therapeutic doses so that you can feel the difference.

CardiOz™ contains Linseed Oil, Grapeseed and natural Vitamin E for their potent antioxidant benefits.

CardiOz™ contains Milk Thistle, a potent liver herb used for detox and especially useful for those who drink alcohol or eat fatty foods.

Vitamin C, Alpha Lipoic Acid, Selenium, Zinc and Magnesium are included for their powerful antioxidant capabilities.

What can CardiOz do for me?

- Give all day energy with one capsule at breakfast. Feel the difference!
- Increase antioxidant levels in your body
- Looks after your inside— assists in detoxifying the liver and maintaining cholesterol levels in healthy individuals. Particularly beneficial for those who are trying to be healthy but still indulge in fatty foods and alcohol.
- Helps convert food into energy—great for those who want to lose weight.

What are three special features of CardiOz?

- Natural energy that's good for you
- Weight Loss and Detox
- Maintains healthy cholesterol levels in healthy individuals
- Multivitamin of choice for people with healthy blood sugar concerns



Benefits and Features of CardiOz

Features	Benefits
Omega-3, 6, 9 (Linseed oil)	Omega-3, 6, 9 essential fatty acids. Essential fatty acids are incorporated into every cell membrane in the body. Helps to support heart and cardiovascular health.
Ascorbic Acid (Vit C.)	Similar to vitamin E, vitamin C or ascorbic acid is considered to enhance the removal of intracellular oxidative damage that may be associated with exercise. By alleviating oxidative muscle damage, supplementation enables for improved recovery and energy stores post-exercise.
Alpha-Lipoic Acid (Thioctic Acid)	One of the most sought after modern day antioxidant. Alpha-lipoic acid plus vitamin E may be helpful in combating some of the health complications associated with diabetes, including heart disease, vision problems, nerve damage and kidney disease.
Taurine	Taurine plays a role in maintaining healthy cardiovascular function.
Nicotinic Acid	Niacin, also known as vitamin B ₃ or nicotinic acid, is a water-soluble vitamin. Essential for a healthy brain and nervous system. Essential for hormone production, healthy skin, blood cells and digestive system.
Natural Vitamin E	Natural vitamin E supplementation is vital for active individuals as they commonly are deficient of recommended dietary intakes. It has been shown to enhance the removal of oxidative muscle damage associated with exercise and may increase immunity. Active individuals often have depressed immune function and it is therefore important to consume nutrients to support healthy immune function in order to prevent the onset of viral infections such as influenza and similar.
Grapeseed	Grapeseed extract has been shown to prevent oxidative damage throughout the body including muscle damage associated with exercise and therefore may aid in recovery. Supplementation with grapeseed extract may also promote healthy circulation.
Magnesium	<p>Magnesium is essential for many cellular functions, particularly those functions involved in energy production, and for the normal functioning of muscle and nerve tissue. Signs of low magnesium levels can include fatigue, mental confusion, irritability, muscle cramps, problems with nerve conduction and muscle contraction and predisposition to stress.</p> <p>If the blood is low in magnesium it takes it from the muscles and without enough magnesium in muscles they stiffen up or contract. The result may be painful cramps, irritability, twitching or even tremors. Sufficient magnesium helps all muscles in the body to function optimally.</p>
Zinc Amino Acid	Low dietary zinc may impair cardio-respiratory functions during exercise. It is therefore important that zinc intake is maintained at optimal levels to enable peak exercise performance.

Vitamin B6	B vitamins are involved in the production of energy from food. Exercise may increase the need for B complex vitamins.
Betacarotene	Athletes commonly have low beta-carotene antioxidant levels due to the increased oxidative stress of physical activity and exercise. It is therefore important to ensure that levels are optimal and supplementation is merely one method of doing so. Research has revealed that supplementation with a multivitamin containing vitamin E, C and beta carotene improved aerobic performance in amateur athletes.
Folic Acid	Folate, also called folic acid, plays a role in DNA and RNA synthesis and so is critical in cellular division. In order to divide properly cells need adequate folic acid.
CoQ10	CoQ10 supplementation has shown considerable increases in exercise capacity in healthy population. That is an individual may be able to do more exercise at a given level of intensity when supplemented with Co Q10. Coenzyme Q10 (CoQ10) is intimately involved in energy production and may be a potent scavenger of oxidative damage. Supplementation with mixture including coQ10 has been shown to reduce oxidative stress/damage during and after a soccer match. Therefore CardiOz™ is also appropriate for team sports as well as individual exercise regimes.
Selenium	A lack of Selenium has also been associated with low muscular strength especially in the older population. It is therefore important for the active individual to meet recommended selenium intakes in order to support muscular strength. In fact selenium requirements for athletes increase with the amount of energy expenditure. That is the more exercise one participates in the greater their selenium intake requirements.
Vitamin B12	Vitamin B12 is essential for the normal function of all our bodies' cells, and plays a critical role in energy metabolism. Vitamin B12 is essential for red blood cell production and is also required for folic acid metabolism.

CardiOz soft gel capsules contain:

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. R, S ALPHA LIPOIC ACID (Thioctic Acid) 2. ASCORBIC ACID (Vitamin C) 3. BETA CAROTENE (Natural source of Carotenoids) 4. CYANOCOBALAMIN (Vitamin B12) 5. FOLIC ACID 6. LINSEED OIL (Omega 3, 6 & 9) 7. NICOTINIC ACID 8. PYRIDOXINE HYDROCHLORIDE (Vitamin B6) 9. SELENOMETHIONINE | <ol style="list-style-type: none"> 10. CoQ10 (Ubidecarenone) 11. TAURINE 12. MILK THISTLE (Silybum Marianum) 13. VITIS VINIFERA (Grapeseed) 14. EQUISETUM ARVENSE (Horse tail) 15. D-ALPHA-TOCOPHEROL (Natural Vitamin E) 16. ZINC AMINO ACID CHELATE 17. MAGNESIUM AMINO ACID CHELATE 18. THIAMINE NITRATE (Vitamin B1) 19. RIBOFLAVIN (Vitamin B2) 20. MANGANESE AMINO ACID CHELATE 21. CALCIUM PANTOTHENATE (Vitamin B5) |
|--|---|

Directions for use: Adults and children over 12years—Take ONE capsule each morning after food, swallowed whole (do not crush or chew) or as prescribed by your health care professional

Essential nutrients for fitness, cellular energy & vitality

Sometimes we do not eat the right amounts of protein or fresh foods such as veggies, grains and cereals that contain this natural energy. This is where **CardiOz™** can be taken daily, to supplement the diet and give us the boost we need to perform.

We are told that to be healthy, we must consume approximately:

- 8 serves of cereals, bread, pasta, rice
- 5 serves of vegetables, beans, legumes
- 2 serves of fruit
- 2-3 serves of milk, cheese, yoghurt
- 1 serve of meat, chicken or fish

Not many people are able to stick to this type of diet.

That's why we often feel tired, especially in the afternoon, and do not perform to our peak performance, whether that be at the gym, on the field or at home.

Muscle tissues involved in exercise, especially skeletal and cardiac muscles have a high requirement for energy and a high rate of aerobic metabolism. As a result oxidative damage is commonly associated with exercise as is depressed immune function.

CardiOz™ contains the antioxidants, vitamins and minerals present in much of the above food groups which may help to combat muscle damage, optimize cellular energy and/or vitality.

BIOACTIVE COMPOUNDS AND THEIR BENEFICIAL EFFECTS

Grapeseed (*vitis vinifera*)

Grapeseed extract has been shown to prevent oxidative damage throughout the body including muscle damage associated with exercise to aid in recovery.

Supplementation with grapeseed extract may also promote healthy circulation.

Natural vitamin E (D-alpha-tocopherol)

Natural vitamin E supplementation is vital for active individuals as they commonly are deficient of recommended dietary intakes as displayed by Pallazetti et al (date). It has been shown to enhance the removal of oxidative muscle damage associated with exercise and increase immunity. Active individuals often have depressed immune function and it is therefore important to consume nutrients to support healthy immune function in order to prevent the onset of viral infections such as influenza and the like.

Vitamin C (ascorbic acid)

Similar to vitamin E, vitamin C or ascorbic acid is considered to enhance the removal of intracellular oxidative damage that may be associated with exercise. By alleviating oxidative muscle damage,

supplementation enables for improved recovery and energy stores post-exercise.

Betacarotene

Athletes commonly have low beta-carotene antioxidant levels due to the increased oxidative stress of physical activity and exercise. It is therefore important to ensure that levels are optimal and supplementation is merely one method of doing so.

Research has revealed that supplementation with a multivitamin containing vitamin E, C and beta carotene improved aerobic performance in amateur athletes.

Selenium

A supplement mixture including selenium, vitamins C & E was shown to reduce the effects of oxidative damage due to exercise especially during periods of overtraining. It was also shown to enhance physiological adaptations associated with exercise.

A lack of Selenium has also been associated with low muscular strength especially in the older population. It is therefore important for the active individual to meet recommended selenium intakes in order to support muscular strength. In fact selenium requirements for athletes increase as the amount of energy expenditure, due to exercise performance, increases. That is the more exercise one participates in the greater their selenium intake requirements.

Coenzyme Q10 (Co Q10)

Co Q10 supplementation has shown considerable increases in exercise capacity in healthy population. That is an individual is able to do more exercise at a given level of intensity when supplemented with Co Q10. Coenzyme Q10 (CoQ10) is intimately involved in energy production and is a potent scavenger of oxidative damage.

Supplementation with mixture including co Q10 has been shown to reduce oxidative stress/damage during and after a soccer match. Therefore **CardiOz™** is also appropriate for team sports like soccer as well as individual exercise regimes.

Flaxseed oil is a rich source of **Omega-3, 6 and 9**, essential fatty acids, which are vital in the support of immune function and have been shown to support optimal bone strength.

Zinc

Low dietary zinc may impair cardio-respiratory functions during exercise. It is therefore important that zinc intake is maintained at optimal levels to enable peak exercise performance.

Ultimately **CardiOz™** provides all these essential antioxidants and nutrients to support a healthy immune system, combat oxidative damage including muscle damage associated with exercise and to improve recovery, energy and vitality.

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Essential fatty acids, vitamins and antioxidants which may assist in protecting and enhancing health

Research & Development Team

Sunpab Health, Sydney, Australia

Heart Health Starts With You

It is essential to know what to do if you are vulnerable to heart disease---and to do it, even if it means changing your lifestyle. Controlling the important risk factors can make a big difference.

Risk factors are behaviors or conditions that make it more likely for a person to develop heart disease are:

- ◆ High blood pressure
- ◆ Smoking
- ◆ High cholesterol
- ◆ Lack of exercise
- ◆ Stress
- ◆ Family history
- ◆ Being overweight/obese

Prevention is more than wishful thinking; its effectiveness is documented by facts and figures. Did you know that in 2004 , 45% of all deaths in Australia were due to cardiovascular disease (heart disease but also stroke and blood-vessel problems).

We can avoid premature heart disease by teaching our kids the right lifestyle in their early years. It has been proven in numerous clinical studies heart disease is present in children as young as twelve years of age. Children as young as 12 years can be supplemented with CardiOz (one capsule taken with breakfast)

Eliminating or modifying the risk factors that we always knew contributed to atherosclerosis (hardening of the arteries) has had a measurable impact. The only factors we are not able to influence are genetic vulnerability, gender and aging.

Heart Attack Test

A protein produced by inflammation may be an early warning sign of an impending heart attack or stroke. The good news is that the warning sign, called high sensitive C-reactive protein, can be detected by a simple blood test, similar to a cholesterol test. Ask your doctor for further information on this pathology test. You may also like to discuss with your doctor Homocysteine levels, which tends to elevate in cardiovascular disease.

The heart, how it works & what can go wrong

Although the heart is a single organ, it is composed of several different structures:

The Heart Muscle pumps blood out of the heart to nourish every other organ of the body.

Coronary Arteries deliver blood to the heart muscles
Valves (two on each side of the heart) direct blood flow in and out of the heart and among its four chambers; two upper (atria) and two lower (ventricles)

Septum is a muscle down the centre of the heart. It separates the right side, where blood returns from the body on its way to the lungs to refresh its oxygen content, from the left, where the oxygen enriched blood is pumped out to the rest of the body.

Pericardium is a sheath or envelope on the outside that covers and protects the heart muscle

The electrical system consists of pathways that deliver the signals to keep the heart beating.

What is Heart Trouble?

The term "heart trouble" can denote several different problems, depending on which part of the heart is affected. These include:

- ◆ Coronary Artery disease- as depicted in the photograph showing a network of coronary arteries.
- ◆ A weakened heart muscle due to previous heart attack, untreated high blood pressure, long standing valve disease, virus or other infection that has affected the heart
- ◆ A septum thickened by disease, this interferes with blood flow within the heart
- ◆ An electrical system gone awry, blocked or erratic signals interfere with normal muscle contraction, causing the heart muscle to beat too quickly or irregularly leading to possible heart block, cardiac arrest, ventricular fibrillation or chronic valvular disease.

Antioxidants for a Healthy Heart

Vitamin C- is a water soluble antioxidant found to reduce LDL-cholesterol, increase HDL levels, and improve blood vessel linings consequently lowering the risk of heart disease

Natural vitamin E- acts as a lipid-soluble antioxidant that may offer the greatest level of cardiac protection of any antioxidant. In one of the largest epidemiological studies (21,809 women), vitamin E consumption was inversely associated with the risk of death from coronary heart disease.

CoQ10 & Statins- coenzyme Q10 has been shown to improve blood pressure & long term glycaemic control in subjects with type II diabetes.

Studies have shown that cholesterol lowering medications, namely statins (HMG-CoA reductase inhibitors) interfere with the body's synthesis of CoQ10. These include drugs such as Lipitor® Lipex®, Pravachol® and Zocor®. Patients experience side-effects from statin therapy such as muscle aches and pains or fatigue.

Essential fatty acids- Both omega-6 and omega-3 (alpha-linolenic acid), polyunsaturated fatty acids (PUFAs) are cardioprotective and lowers cholesterol. Researchers suggested that, omega-3 have been shown to reduce all-cause mortality and cardiovascular death in patients who had myocardial infarction". Another important aspect of CVD is thrombosis. Platelet aggregation is found to be less in diets rich in omega-3 fatty acids. Blood pressure is also reduced by regular consumption of fish oil and weight loss can also be beneficial.

Zinc is necessary in over 200 enzymatic reactions in the body and more than 2000 transcription factors involved in gene expression of various proteins

Folic acid supplementation has been shown scientifically in a randomised controlled trial to lower plasma homocysteine levels. High homocysteine levels are associated with an increased risk of heart disease. Folic acid has the ability to convert homocysteine to methionine, with the help of Vitamin B12, also found in CardiOz.

Alpha-lipoic acid supplementation has been shown to improve several indices of metabolic activity and lower the degree of oxidative stress. Alpha-lipoic acid plus vitamin E may be helpful in combating some of the health complications associated with diabetes, including heart disease, vision problems, nerve damage and kidney disease.

B vitamins- B6 has also been found to reduce high blood levels of homocysteine which is associated with an increased risk of heart disease. B12 works with Folic acid to reduce homocysteine levels by converting homocysteine to methionine. It is also required for the production of red blood cells. Studies indicated that increased supplementation of B6, B12 and folic acid may reduce incidence of vascular disease.

Selenium is present in the antioxidant enzyme glutathione peroxidase that protects the body against oxidative injury.

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Anti-Oxidants

INTRODUCTION

Research has confirmed that the quality and quantity of our nutritional intake influences our health, and it is widely accepted that many common diseases such as coronary artery disease, cancer of the prostate, bowel and breast, and arthritis are the result of poor nutritional habits. There is strong epidemiological evidence that our anti-oxidant nutritional status is an important factor in our health.

Unfortunately there are not enough naturally occurring anti-oxidants in our system to do the job on their own, so our body looks for supplementation with some of the most powerful anti-oxidants such as vitamin E, beta carotene, selenium, vitamin C, grape seed, co-enzyme Q10, N-acetylcysteine, zinc and magnesium (enzyme acts as an anti-oxidant co-factor)

“The best method of prevention of coronary heart disease, cancer etc. is to lead a healthy lifestyle as well as ingest anti-oxidant vitamins and this powerful combination will markedly increase your chances of a long, healthy and enriched lifestyle.”

Dr Ross Walker, M.B.B.S; FRACP. Specialist Cardiologist Sydney

Free Radicals and Antioxidants What are they?

Free radicals are highly unstable oxygen molecules that travel freely throughout the human body in search of an electron partner. They steal electrons from normal healthy cells and they are responsible for oxidation in our cells - a process which destroys our cells health.

How Free Radicals Cause Disease?

Free radicals can destroy cells by damaging their membranes. The membrane is then unable to take nutrients into the cell and remove waste products which renders the cell unable to reproduce itself.

The cell dies from starvation or drowns in waste products. This type of damage accelerates the aging process as tissues lose their function due to the steadily decreasing number of cells.

“There is a compelling body of scientific evidence that suggests free-radical pathology is associated with many of the chronic disease eg. Cancer, heart disease, skin cancer and degenerative eye disease, such as cataracts and macular degeneration”

Prof. J. Blumberg M.D Taft’s University, Boston.

What are Anti-Oxidants? Natures Best Defence Against Free Radicals

Anti-oxidant is a name given to a combination of nutrients and enzymes, which assist in protecting the body from havoc brought about by harmful FREE RADICALS. Some of the most powerful of these free radical scavengers or anti-oxidants include:

- Vitamin E (Natural d-alpha-Tocopherol)
- Betacarotene (Natural Source)
- Selenium (Natural Source Garlic, Brewers Yeast)
- Vitamin C (Ascorbic Acid)
- Grapeseed extract (Oil soluble can enter cells readily - as opposed to water soluble pine bark)
- Co-enzyme Q10
- N-acetylcysteine
- Zinc and Magnesium (enzyme acts as an anti-oxidant co-factor)

The medical evidence is now irrefutable that the right use of the right anti-oxidants listed above can prevent and even reverse many forms of cancer, heart disease, atherosclerosis, adult onset diabetes, arthritis, circulatory disorders, wrinkling and premature aging.

Omega-3 Fatty Acids

Omega-3 fatty acids and omega-6 fatty acids are also known as essential fatty acids (EFAs) because humans, like all mammals, cannot make these and must obtain them in their diets.

“A higher proportion of Omega-3 fatty acids in muscle membrane is associated with improved insulin function and conversely, a higher proportion of the more saturated fatty acids is associated with insulin resistance.”

“Insulin resistance is essentially the relative failure of insulin action and is central to the development of many common diseases in the community including heart disease, obesity, non-insulin dependant diabetes and hypertension”

Dr L. Baur. New Children’s Hospital, Westmead, Sydney.

Fish oils are rich in omega-3 fatty acids which specifically inhibit the formation of plaque. Two omega-3 fatty acids which reduce the risk of heart disease are eicosapentaenoic acid (EPA) and docosahexanoic acid (DHA). Diets high in EPA and DHA lower serum triglycerides and total cholesterol, whilst increasing the HDL cholesterol (good cholesterol). Omega-3 fatty acids from salmon oil also reduces the tendency for platelets to aggregate and form clots. All of the above factors contribute towards lower incidence of coronary artery disease.

“Coronary Heart Disease risk is increased by consumption of a high saturated fat diet and reduced by the intake of antioxidant vitamins and flavonoids”

Dr R. Vogel M.D.

Carnotenoids (Beta-Carotene)

Foods such as tomatoes, carrots, mangoes, leafy green and yellow vegetables are all excellent source of beta-carotene, a natural substance found in plants which is turned into Vitamin A by the intestine.

Beta-carotene protects the skin and mucous membranes, such as the linings of the stomach and lungs, against free radicals. Researchers world-wide have found that up to 25mg of beta-carotene in the diet reduced the risk of coronary heart disease and cancer.

An individual may have to eat up to 1200 grams of carrots daily to obtain the same results as supplements. This could be due to the inefficiency or inconsistent absorption of beta-carotene from food.

Beta-carotene provides all of the benefits of an antioxidant pro-Vitamin A, with none of the side effects associated with Vitamin A

Garlic

For centuries, garlic (*Allium sativum*) has had a unique position in the treatment schedule of many cultures and remains today one of the most popular and widely accepted herbal remedies.

Clinical studies have shown that garlic significantly reduced serum cholesterol and triglycerides, reduced systolic and diastolic blood pressure, significantly increased blood flow in arterial capillaries and reduced blood fibrinogens i.e. clotting factors decreased (thickness of blood is significantly reduced after the consumption of garlic).

Both garlic and vitamin E inhibit the formation of blood clots and fat oxidation.

Garlic’s value in preventing cardiovascular disease has been reported by several research groups. Garlic and its components are known to possess antiplatelet activity. It was found that garlic oil administration to healthy subjects and patients with coronary artery disease (CAD) inhibited platelet aggregation.

Garlic and Selenium

There are a number of foods that contain Selenium including Garlic, Brewers yeast and Brazil nuts. Selenium is essential for the production of glutathione peroxidase, an important intracellular antioxidant.

Association Of Vitamins with Vitamin C (Asorbic Acid) reduction in heart disease

A study published by Harvard School of Public Health reported a 40% greater risk of heart disease for those with the lowest folic acid blood levels compared to those with the highest, and similarly found a 50% higher risk of heart attack for those with the lowest blood levels of vitamin B6 compared to those with the highest, and similarly found a 50% higher risk of heart attack for those with the lowest blood levels of vitamin B6 compared to those with the highest levels.

Another study at Taft's University in Boston found that low blood levels of folic acid and vitamin B6 were associated with an increased incidence of atherosclerosis of the carotid artery, the main artery supplying the brain.

Homocysteine: Risk factor for coronary heart disease

The relationship of elevated plasma cholesterol levels with atherosclerosis (hardening of arteries) and coronary heart disease has been stressed for many years. However, it is now known that elevated plasma levels of homocysteine are another cardiac risk factor. Deficiency of nutrients such as folic acid, vitamin B6 and vitamin B12 which regulate homocysteine metabolism may be a more common cause of raised homocysteine levels. According to a report in the British Medical Journal, dietary supplementation with folic acid, Vitamin B6 and Vitamin B12 showed marked reduction in plasma homocysteine levels which are associated with the number one killer in Australia, Coronary Heart Disease.

Vitamin E may reduce the risk of heart disease

Vitamin E is considered to have a role in the prevention of atherosclerosis by preventing oxidation of LDL (bad) cholesterol and reducing platelet clumping (clotting), but also helps reduce the initiation process of diseased arterial walls.

A study published in the Journal of the American Medical Association concluded that vitamin C (ascorbic acid) could prevent reduced endothelial function. The anti-oxidant vitamin C is presumed to play a pivotal role in minimising the damage from oxidative products including free radicals.

This protective function is two fold; the already oxidised groups in enzymes are reduced and the oxidants and free radicals are removed. Professor Lewis Paulding stated that by taking vitamin C, one could live twenty five years longer, reduce the incidence and severity of the common cold and help prevent cancer.

Zinc

Zinc is identified as a co-factor for over 90 different enzymes and is important for the liver and muscle, in the building of new proteins and in cellular growth and division. Zinc, apart from its antioxidant properties has been established as one of the main protectors of the immune system and a major disease fighter.

Magnesium

Magnesium has been called '**the action mineral**' due to its role as a co-factor and its triggering minerals in many enzyme systems. Magnesium has been investigated for the beneficial effect of reducing plasma lipids and cholesterol.

Essential Functions Of Magnesium

- A biological calcium blocker
- Suppresses myocardial instability and tachyarrhythmias.
- Prevents sodium overload
- Controls cardiac arrhythmia unresponsive to other therapy.
- Maintains intracellular levels of potassium.

After many years of scientific research, Magnesium deficiency has been found to be a dominant cardiovascular risk factor.

Taurine

The amino acid Taurine is another valuable nutrient in the prevention of cardiac arrhythmia. Taurine, much like Magnesium, regulates potassium transfer in and out of the heart muscle cells. Heart muscles are controlled by Potassium, Calcium ratio and Taurine normalises Potassium concentration in the heart and in turn maintains the heart's normal electrical rhythm. Taurine also has a profound effect on Calcium metabolism.

Grapeseed

In recent years interest has focused on the therapeutic potential of the phenolic compounds in grapes. The polyphenols in red wine have been implicated in the so-called “**French Paradox**” a term referring to the low incidence of cardiovascular disease in France, despite a high dietary fat intake. Grapeseeds are rich in polyphenolic compounds known as procyanidins. Hence grape seed procyanidins may prevent oxidative injuries to the vascular endothelium, and the protection of the extravascular matrix may cause a sealing effect on the capillary wall. Grapeseed procyanidins also inhibit platelet aggregation. The potential of grapeseed flavonoids to prevent cellular or uncontrolled growth is profound. Several investigators have shown that if they are taken daily, grapeseeds are beneficial for people suffering from cardiovascular disease and breast tumours.

Benefits from grape seed

- Reduced circulatory disease (incl. Cardiovascular and stroke)
- Reduction of varicose vein
- Lessening of the effects of aging
- Assists in the healing of bruises
- Protects against disease
- Aids in the control of diabetes
- Reduces stress levels

Reference:

Pharmacare Health Information Service

The best combination since ice-cream and chocolate

Sugar Balance and CardiOz join forces to create a combination of scientifically validated ingredients that may alleviate certain health issues and improve your health & well being

Research & Development Unit

Sunpab Health Sydney, Australia

Two of Sunpab Health's scientifically validated products; Sugar Balance and CardiOz have become a star couple when combined to combat health issues related to sugar balance and heart health. As issues with blood sugar levels often coincide with poor cardiovascular health, both of these products would compliment each other for better health and well being.

For those that have health concerns, or are overweight or obese, Sunpab Health offers a solution with two of their products; Sugar Balance and CardiOz. The main ingredients found within CardiOz have been scientifically validated to contribute towards heart health and healthy blood sugar balance.

The ingredients provide the best combination to combat certain health issues.

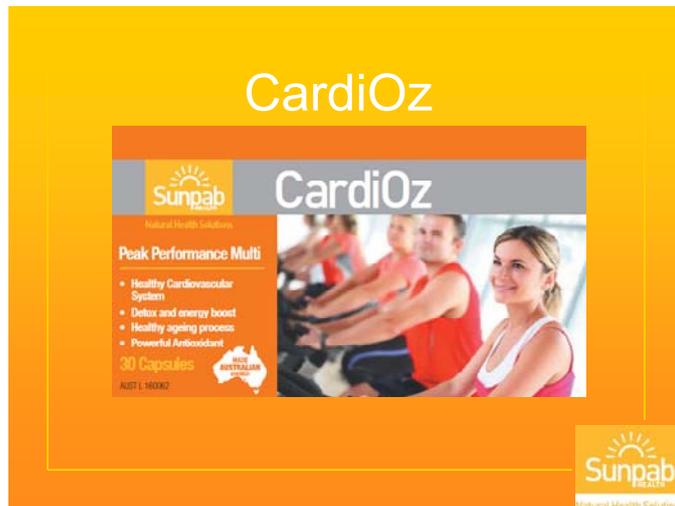
Ingredient	Benefit
Magnesium	It is common for people with blood sugar issues to have low levels of magnesium which commonly leads to painful muscular cramps and joint pain. CardiOz has magnesium in a bio-available form (amino acid chelate) to aid this deficiency.
Zinc	Current literature suggest a deficiency in Zinc may increase insulin resistance and . CardiOz contains 12.5mg of Zinc in a bio-available form (amino acid chelate).
Taurine	Taurine plays an important role in metabolism, and is found in the heart muscle, central nervous system and skeletal muscle.
Vitamin E	CardiOz has natural Vitamin E (150 IU) which is a fat soluble vitamin and a potent antioxidant. May assist diabetics who have cardiovascular and renal concerns.
Vitamin C and Grapeseed	CardiOz has both Vitamin C and Grapeseed, which are potent antioxidants used in the repair of vascular tissue and may assist those with circulatory issues.
B Group Vitamins	B1, B2, B5, B6 and B9(Folic Acid) and B12 may assist in improving heart health and healthy blood sugar balance.
Omega—3, 6 and 9 (EFA's)	Literature suggest supplementation with Omega-3, 6 and 9 may improve insulin sensitivity, increase HDL and decrease LDL cholesterol.
Coenzyme Q10	Is an important component to improve insulin sensitivity and increase cellular energy.
Lipoic Acid	Lipoic acid improves insulin sensitivity: antioxidant activity.
Milk Thistle	CardiOz contains 150mg of Milk Thistle. Is used to improve digestion and general liver function and a supplement of choice for fatty liver.

Dosage:

Sugar Balance—one caplet twice daily, 15 minutes after two main meals.

CardiOz—one capsule in the morning with breakfast, do not crush or chew.

PowerPoint Presentation: CardiOz



What is CardiOz?

CardiOz helps to:

- Increases antioxidant levels in your body
- May assist in detoxifying the liver may boost energy levels
- Maintains healthy cholesterol levels in healthy individuals
- Multivitamin of choice for people with healthy blood sugar concerns
- Helps convert food into energy—great for those who want to lose weight.



Essential Ingredients

Magnesium - It is common for people with blood sugar issues to have low levels of magnesium which commonly leads to painful muscular cramps and joint pain.

Zinc - Current literature suggest a deficiency in Zinc may increase insulin resistance and . CardiOz contains 12.5mg of Zinc in a bio-available form (amino acid chelate).

Taurine - Taurine plays an important role in metabolism, and is found in the heart muscle, central nervous system and skeletal muscle.

Vitamin E - CardiOz has natural Vitamin E (150 IU) which is a fat soluble vitamin and a potent antioxidant. May assist diabetics who have cardiovascular and renal concerns.



Essential Ingredients

Vitamin C & Grapeseed - CardiOz has both Vitamin C and Grapeseed, which are potent antioxidants used in the repair of vascular tissue and may assist those with circulatory issues.

B-Group Vitamins - B1, B2, B5, B6 and B9(Folic Acid) and B12 may assist in improving heart health and healthy blood sugar balance.

Omega—3, 6 and 9 (EFA's) - Literature suggest supplementation with Omega-3, 6 and 9 may improve insulin sensitivity, increase HDL and decrease LDL cholesterol.

Coenzyme Q10 - Is an important component to improve insulin sensitivity and increase cellular energy.

Essential Ingredients



Lipoic Acid - Lipoic acid improves insulin sensitivity; antioxidant activity.

Milk Thistle - CardiOz contains 150mg of Milk Thistle. Is used to improve digestion and general liver function and a supplement of choice for fatty liver.



Natural Health Solutions

Student's Memory Power™



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Student's Memory Power

Clinical Update: Product Overview

What is Student's Memory Power?

Student's Memory Power™ is formulated to help students improve their:

- ◆ Memory
- ◆ Learning
- ◆ Concentration
- ◆ Regulate healthy temperament
- ◆ Problem solving abilities
- ◆ Support eye health

DHA & Student's Memory Power

- ◆ Student's Memory Power contains a patented sourced Omega-3 which has a high ratio of DHA to EPA.
- ◆ Research has shown that supplementation of Omega-3 (DHA) is the primary building block of the structure of the brain. An ongoing supplementation of DHA is necessary for proper care and support of healthy brain and eye function.

What is in it?

Up to 20% of the fatty tissue in a healthy brain consists of DHA so its no wonder that supplementation of Omega-3 supports healthy brain function in people of all ages.

DHA is highly enriched in the retina of the eye. This Marine fatty acid is important for healthy eye function for everyone.

What can Brain Power do for me?

- Increase concentration
- Improve academic success
- Minimises risk of brain and eye related medical issues in the future

Why choose Student's Memory Power?

- Highest quality concentrated DHA Omega-3 in its class
- Patented extraction procedure
- No fishy smell or taste
- No artificial colours, preservatives, flavours or sweeteners
- Mercury tested
- Easy to swallow
- Australian made and owned



Essential Nutrients for Brain Development & Optimal Student Performance

It is well documented that fish oil and in particular Docosahexaenoic Acid (DHA) plays an important role in healthy brain function and information processing.

The brain is abundant in n-3 fatty acids including DHA and EPA. DHA is the most abundant n-3 fatty acid in mammalian brains.

The richest dietary sources of DHA and EPA are fish and seafood in particular oily fish such as sardines and tuna. However deficiencies are common and if recommended daily intakes are not being met by one's diet; supplementation may prove to be the next option.

RECOMMENDED DAILY REQUIREMENTS OF LONG CHAIN FATTY ACIDS (DHA & EPA):

Sunpab's high DHA content patented fish oil may enhance memory and learning, promote information processing and recall and improve mental clarity and concentration.

In fact a deficiency in fish oil and DHA can lead to cognitive impairments and disruptive behavioural performances as explored by Innes (2007). Recent studies focus on the role of DHA in neurogenesis, neurotransmission and as a protectant against oxidation within the body.

Studies have suggested that supplementation with fish oil throughout one's lifetime may have positive effects on early mental and motor skill development, information processing, memory and recall. Ultimately maximising an individual's cognitive potential during development and prevent its loss with ageing.

Some children with reading difficulty have shown improvements in their reading ability after supplementation with a high DHA content fish oil supplement independent of any possible confounding factors.

There is also some evidence out there that suggests with fish oil supplementation children with ADHD and similar behavioural conditions have improved behavioural outcomes.

UNIVERSITY STUDY PROVES DHA MAY BOOST BRAIN FUNCTION

The University of Cincinnati recently conducted a study which showed a significant increase in brain function when children took high DHA Omega-3.

The results showed that the DHA levels in the membrane of red blood cells increased by 70% in the high DHA group, while the placebo groups experienced an 11% drop in DHA levels.

This study indicated an increase activation of a part of the brain associated with working memory in the groups who took DHA.

American Journal of Clinical Nutrition

In addition to brain health, omega – 3 fatty acids such as DHA and EPA improve heart health also and prevent the oxidation of LDL cholesterol which often can lead to heart disease and myocardial infarctions.

Student's Memory Power has high quality concentrated DHA Omega-3 which has greater potency than standard fish oil and has been specifically formulated for young students and adults to help support healthy brain function, learning ability, eye health and to regulate a healthy temperament.

WHY CHOOSE SUNPAB HEALTH'S STUDENT MEMORY POWER?

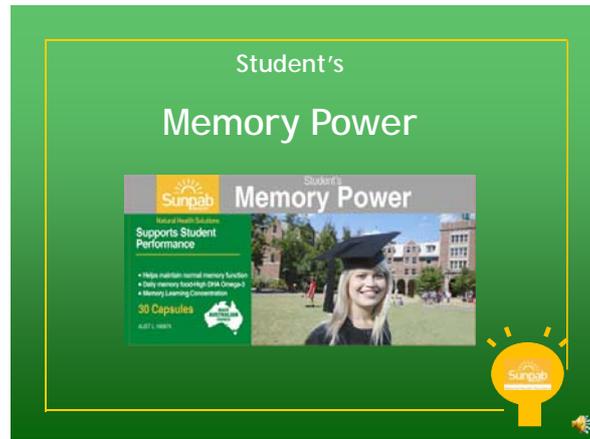
Fish oil supplements vary in their content with those of a higher quality providing greater effects.

- Sunpab Health's Student Memory Power has:
- The highest quality concentrated DHA Omega-3 in its class
 - No fishy smell or reflux
 - No artificial colours, preservatives, flavours or sweeteners.
 - And is mercury tested and easy to swallow

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PowerPoint Presentation



Students Memory Power

Professionally formulated to help children & students with their:

- Memory
- Learning
- Concentration



The Natural ingredients support healthy brain & eye development.



Research: Students Memory Power

- Student's Memory Power contains a scientifically validated sourced Omega-3 which has a high ratio of DHA to EPA.
- Research has shown that supplementation of Omega-3 (DHA) plays an important role in brain and eye development such as learning ability, memory, concentration and behaviour.
- The University of Cincinnati recently conducted a study which showed a significant increase in brain function when children took high DHA Omega-3.
- It is well documented that fish oil and in particular Docosahexaenoic Acid (DHA) plays an important role in healthy brain function and information processing.



Students Memory Power Production Flow Chart



Students Memory Power

- Contains Omega-3 (DHA) which makes up 20% of the fatty tissue in a healthy child's brain consists & is therefore important in eye health, intelligence, IQ and academic performance.
- One Capsule Daily





Natural Health Solutions

Mum-2-B Baby Smart



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Baby Smart

Clinical Update: Product Overview

What is Baby Smart?

Baby Smart supports healthy brain development and was developed in Australia using scientifically validated concentrated fish oil to produce the maximum DHA content. Research suggests that supplementation with high DHA formulas provides important nutrients support for mothers and their babies during pregnancy.

What is in it?

Baby Smart contains a scientifically validated concentrated form of DHA that is odourless, flavourless, pure and free from contaminants such as mercury. Stringent Australian GMP Guidelines enable for this to occur.

Baby Smart guarantees a product that is virtually free of the unhealthy by-products that result from over-processing or improper handling:

- Trans Fats
- Free Fatty Acids
- Peroxides
- Conjugated Dienes
- Oligomers

Baby Smart also guarantees the lowest levels of environmental pollutants in the industry:

- PCBs
- Dioxin-like PCBs
- Dioxins
- Heavy Metals
- Pesticides
- Brominated Flame Retardants

Baby Smart Production Chart



What can Baby Smart do for you and your baby?

Literature suggests that fish oil may assist neurological development of the fetal brain & help encourage full-term pregnancies. It may also aid to reduce the incidence of post-natal depression & promote improved:

- Cognitive function (IQ scores)
- Hand eye coordination
- Visual acuity
- Problem solving ability
- Language & motor skills.
- Attention & focus on tasks

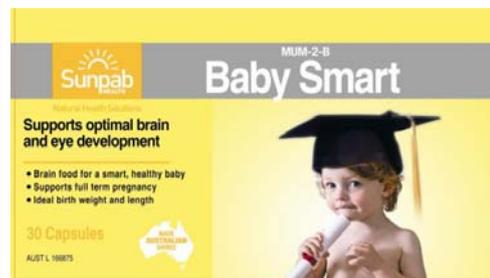
What are three special features of Baby Smart?

- High DHA, patented fish oil
- No smell
- No fishy taste

Maximum Specification Limits For Environmental Pollutants

		PhEur	Vol Monograph	Baby Smart
As	mg/kg	NA	0.1	0.1
Cd	mg/kg	NA	0.1	0.01
Hg	mg/kg	0.5	0.1	0.005*
Pb	mg/kg	0.1	0.1	0.05
DDD ¹	mg/kg			0.005
DDE ²	mg/kg			0.005
DDT ¹	mg/kg			0.005
HCB	mg/kg			0.005
PCBs	mg/kg		0.09	0.01
Dioxins + Furans (PCCD + PCDF) (TE WHO)	pg/g	2	2	1
		NA	3	3
Dioxin-like PCB's	pg/g			
Dioxins + Furans + Dioxin-like PCB/s (TE WHO)	pg/g	10	NA	4

*Detection Limit
¹ sum: o,p' + p,p'
² p,p'



BABY SMART

Literature suggests that fish oil may assist neurological development of the foetal brain & help encourage full-term pregnancies. It may also aid to reduce the incidence of post-natal depression & promote improved:

- Cognitive function (IQ scores)
- Hand eye coordination
- Visual acuity
- Problem solving ability
- Language & motor skills.
- Attention & focus on tasks

It may also prevent premature births and promote full-term pregnancies and reduce hyperactivity in children.

Fish oil is essential for prenatal cognitive development & when taken during pregnancy may improve brain development and visual perception skills. Fish oil, being a good dietary source of DHA may also assist to reduce hyperactivity in children & promote one's attention span & their focus on learning tasks.



The Benefits of Fish Oil: Critically analysing the evidence

Fish Oil is essential in any pregnancy and breast feeding formula as its component, DHA has been scientifically verified to optimise brain and retinal development in the unborn child. Supplementation with DHA may improve **cognitive development** and have a direct effect on the **child's intelligence**, as DHA has an important role in development of synaptic processing of neural cell interaction and growth.

The literature (Jensen, 2006) suggests that infants whose mothers ate oily fish or were supplemented with high DHA fish oil during pregnancy and/or breastfeeding had improved **cognitive scores** and **visual acuity** results than those with mothers who did not have the supplementation.

Up to 20% of the fatty tissue in a healthy child's brain consists of DHA. DHA is important in eye health, intelligence, IQ and academic performance.

As stated previously DHA and EPA intake may promote **full term pregnancies** and **protect against pre-eclampsia**.

One particular study (Olsen et al, 1992) involving over 500 Danish women explored the effect of fish oil supplementation versus a control of olive oil on the length of gestation. The randomised controlled trial like many others that have been published indicates that fish oil supplementation increased the length of gestation time significantly. The increased length ranges from 2 days to 5 weeks in a number of studies explored in Jensen's systematic review (2006) and a subsequent Cochrane review (2006). It is important to note that mixed results have also been reported in regards to gestational length outcomes and more research is required in this field.

In addition to this Sorenson et al (1992) indicated that fish oil supplementation during the third trimester can **prevent or treat pre-eclampsia and intra-uterine growth retardation** due to its effects on the prostacyclin and thromboxane pathways. Despite this evidence is lacking in this area and no definitive conclusions have yet been made especially in regards to pre-eclampsia prevention. However Jensen (2006) explores the possibility that high arachidonic acid supplementation found in some products in addition to fish oil may in fact exacerbate or lead to pre-eclampsia (see further on for more details in regards to the possible adverse effects of AA supplementation in some of these products excluding Sunpab's Baby Smart formula that contains no AA).

It has also been found that children born to mothers supplementing with DHA have **reduced levels of allergic immune responses**.

The link between fatty acid supplementation and atopic disease (i.e. Allergies) is that a number of mediators which play a role in such reactions are synthesised in fact from arachidonic acid, a fatty acid in itself.

With the increased consumption of supplements containing linoleic acid, arachidonic acid and oleic acid, the incidence of allergies has increased over recent years.

However when fish oil is supplemented, EPA and DHA replace arachidonic acid stores in cell membranes throughout the body and in fact inhibit the metabolism of arachidonic acid. This actually results in decreased inflammation and a reduction in allergic reactions.

Many animal and human studies (please refer to the reference study for more details) have shown that dietary fish oil including fish oil supplementation is beneficial in the protection against allergies and that it is rare to have an allergy to fish oil, especially if it has gone through the appropriate manufacturing processes (as in the Baby Smart fish oil manufacturing process) to remove traces of additional amino acids that may arise from other fatty acids.

Therefore individuals need to take into consideration which fish oil supplementation they wish to choose and try to avoid those with arachidonic, linoleic and oleic acid additions. If allergies arise due to the consumption of such products with these fatty acids it is suggested that the individual switch to use a supplement without the added fatty acids such as Baby Smart.

Evidence emphasises the important role of polyunsaturated fatty acids (PUFAs) especially docosahexaenoic acid (DHA), play in **maternal, foetal and infant health and development.**

In fact preliminary evidence examined in Jensen's systematic review (2006) suggests that DHA supplementation or increased seafood consumption may **reduce the incidence of depression during and post pregnancy.** However many of the trials are small and larger randomised controlled trials need to be performed before any significant recommendations can be provided.

It is important to note the possible adverse effects of consuming seafood and or fish oil products that may contain contaminants including mercury which has significant adverse effects on pregnancy and foetal outcomes. Even more important to note is that the patented form of DHA available in our Baby Smart product is **free from contaminants and mercury tested** to ensure the products purity and reduce the possibility of any mercury related adverse effects.

A scientifically validated concentrated form of Fish oil & DHA

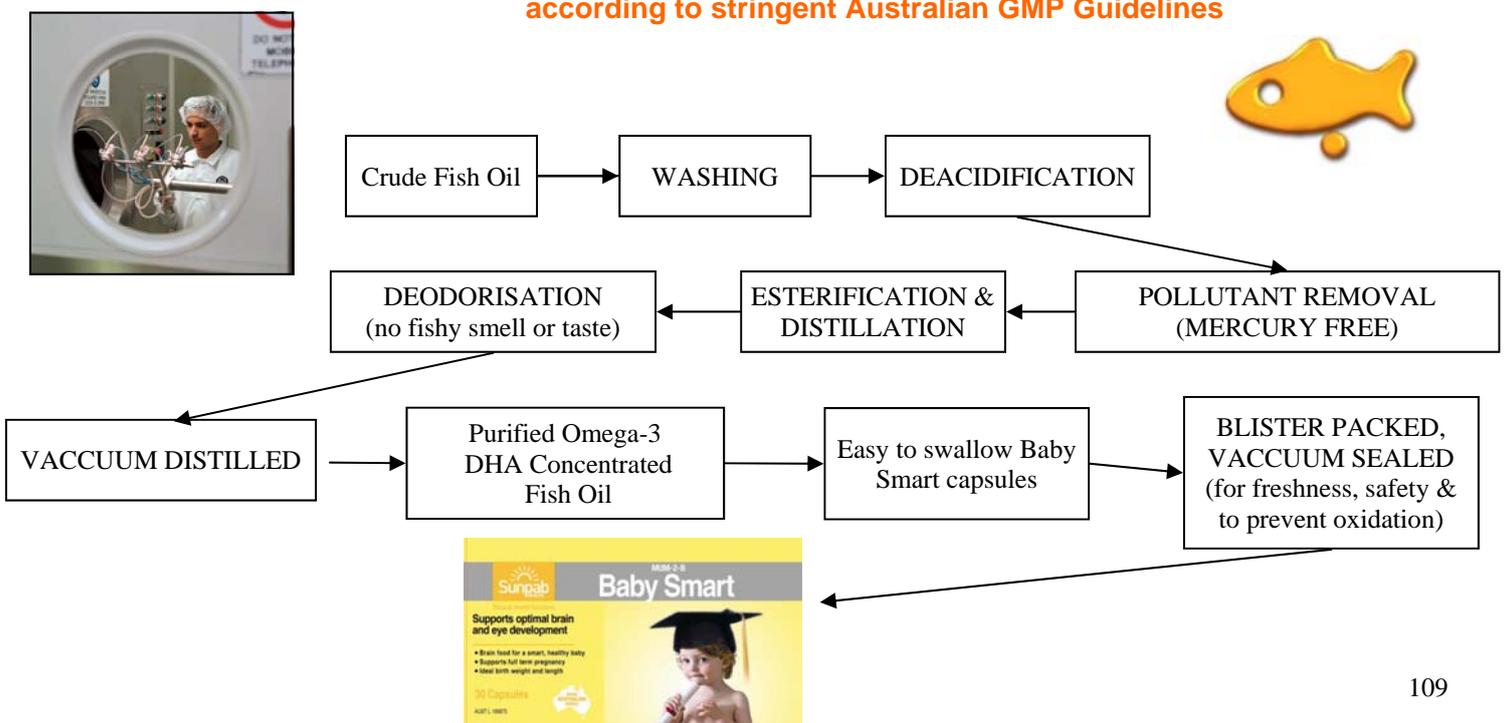
Baby Smart contains a patented and concentrated form of DHA that is odourless, flavourless, pure and free from contaminants such as mercury. Stringent Australian GMP Guidelines enable for this to occur. Please observe the production flow chart below for further insight into the process.

It is also important to note that it is recommended that fish oil capsules be individually packaged in an airtight blister packaging to prevent the oxidation of the fish oil itself. In saying this many supplements are still being packaged together in bottles or containers without being individually sealed which exposes them to air and therefore starts to break the product down. It is suggested that consumers choose fish oil supplements individually packaged like our Baby Smart portion unit, blister packaging.

Otherwise if this did not occur Grundt et al (2003) suggests that omega-3 containing products without portion unit packaging could easily transform into highly toxic peroxides which promote harmful effects, even the development of cancer.

BABY SMART PRODUCTION FLOW CHART

Production process utilised to concentrate, purify and decontaminate patented fish oil according to stringent Australian GMP Guidelines



Purified fish oil as present in Sunpab’s Baby Smart formula has fewer pollutants (like mercury which can lead to miscarriage), fewer calories and less cholesterol than ‘natural’ fish oil that has not been processed through a stringent protocol (as present on the previous page).

If individuals are unable to obtain adequate omega-3 from fish and other food products in their diet, a concentrated fish oil supplement is the next best thing. In fact a concentrated fish oil supplement like Baby Smart can contain up to 30 times the amount of omega-3 found in a serving of fish.

It is important that fish oil be purified for human consumption in order to minimize the levels of persistent environmental contaminants such as mercury, lead, PCBs and dioxins which can accumulate in tissues and cause long term exposure leading to adverse health effects.

A Summary of the role of DHA in Pre- and Post-natal Health

Healthy brain and eye development in infants requires substantial amounts of the fatty acid DHA that needs to be supplied by the mother. Marine based DHA present in Baby Smart provides the perfect ratio to support pre- and postnatal health with supplementation especially recommended during the last three months of pregnancy and throughout the time of breast feeding.

A summary of the role of DHA in Cognitive Health

DHA is also the omega-3 fatty acid abundantly present in a healthy human brain. Poor memory has been associated with low concentrations of DHA. Baby Smart with a high level of DHA provides nutritional support for age-related memory decline.

Nutritional supplements containing ALA

It is important to note that ALA from flax oil which can be found in many nutritional supplements can only be partially converted to EPA and DHA in the human body. Thus it is perhaps more beneficial if consumers purchase products containing uncontaminated DHA and EPA products rather than those that contain ALA with the view to be converted to DHA and EPA in the body.

Why choose Baby Smart?

Purity:

- the aforementioned purification process ensures that levels of pollutant meet or exceed global authorities’ limits
- Oxidation parameters are well below international standards as a result of the purification technology used and careful treatment of the applied high quality raw material
- Produced according to pharmaceutical standards

Quality:

- The fish oil component of Baby Smart is treated and purified in a HACCP approved manufacturing plant and licensed to manufacture active pharmaceutical ingredients (API)
- GMP certification ensures high quality products
- is produced in a dedicated GMP-certified facility that is fully licensed for the production of omega-3 fatty acids and fish oil
- Enzymatic production process ensures mild treatment of oils

Innovation:

- Science-based research and clinical validation for every condition-specific formula
- New solutions and processes for improved quality
- Highly concentrated marine Omega-3 EPA/DHA fatty acids
- State of the art science facilities/technologies

Comparison of Fish Oil Purity

	Baby Smart concentrated omega-3 fish triglycerides	Normal fish Oil
Omega-3 PUFAs	Minimum 60%	~30%
Other Unsaturated FAs	~20%	~35%

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PowerPoint Presentation

Baby Smart



What is Baby Smart?

Baby Smart supports healthy brain development & was developed in Australia using scientifically concentrated fish oil to produce the maximum DHA content.

Research suggests that supplementation with high DHA formulas provides important nutrient support for mothers and their babies during pregnancy.



Why choose Baby Smart?

- Scientifically validated DHA Fish Oil
- Unique Omega-3 Purification Process (see next slide)
- No smell
- No fishy taste
- Purity
- Quality
- Innovation
- Assists in improving:**
- Cognitive function (IQ scores)
- Hand eye coordination
- Visual acuity
- Problem solving ability
- Language & motor skills.
- Attention & focus on tasks



Research Evidence: The need for supplementation

- Literature suggests that fish oil may assist neurological development of the fetal brain & help encourage full-term pregnancies. It may also aid to reduce the incidence of post-natal depression.
- Up to 20% of the fatty tissue in a healthy child's brain consists of DHA. DHA is important in eye health, intelligence, IQ and academic performance.
- Studies suggest that fish oil supplementation during the third trimester can prevent or treat pre-eclampsia and intra-uterine growth retardation
- Evidence emphasizes the important role of polyunsaturated fatty acids (PUFAs) especially docosahexaenoic acid (DHA), play in maternal, foetal and infant health and development.

Omega-3 Production Flow Chart

