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Nutrition Matters™



Graeme Sait, CEO,
NTS

Chia - Anatomy of a Superfood

Hippocrates, the father of modern medicine, suggested that our food should be our medicine and our medicine our food. The profundity of that statement is now quantified on a regular basis as science unravels the mind-boggling array of protective biochemicals found in fresh food. It is not just the new understanding of the **medicinal value** of food that supports the founder's proclamations. A host of other nutritional findings have revealed that there really is no substitute for whole foods. We have isolated key protective players like beta carotene, alpha tocopherol, lycopene and folic acid and turned them into popular supplements, to compensate for what is missing in the food. However, recent research has revealed that the supplements simply don't perform like **the real thing**. The reason is that these nutrients never act in isolation when present in food. Beta carotene, for example, is supported by dozens of other carotenes in the food form. Alpha tocopherol is just one of the eight different components of vitamin E that work together to determine its efficacy (four tocopherols and four tocotrienals). Lycopene also works best in concert with a suite of other carotenes and folic acid requires the other B vitamins to perform well. This is just the tip of the iceberg as there are a range of other components in **wholefood** that are synergistic for the uptake and utilisation of each composite nutrient. There is also a new awareness that **food processing** not only removes a large percentage of vitamins, minerals and phytonutrients, it completely destroys the fragile enzyme component of wholefoods.

The Enzyme Equation

Dr Edward Howell contends that we are all born with an inherited capacity to produce enzymes, and once our enzyme bank accounts are empty, we succumb to degenerative disease. Enzymes are responsible for every aspect of our health, from digestion to detox and immunity. They feature a measurable life-force that cannot be synthesised and there are three basic types. These include digestive enzymes, metabolic enzymes and food enzymes. All food contains the enzymes that help with its

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digestion but these fragile nutrients are destroyed during cooking and food processing. The more cooked and processed food we consume, the greater the demand for digestive enzymes and the greater the stress on the pancreas and liver to supply these enzymes. When we have exhausted our **inherited capacity** to produce digestive enzymes, then the metabolic enzymes (which can multi-task) are directed to help with the energy-intensive process of digestion. When this occurs every other system is compromised. The **longevity solution** here is threefold. Reduce your consumption of dead processed food and cooked food, increase your consumption of raw food, and include enzyme supplements or enzyme rich foods in your diet to reduce the ongoing withdrawal from your enzyme bank account. **Seeds** are amongst the most nutrient dense of all foods as they represent the pinnacle of a plant's lifework and purpose. Whatever the plant could access from the soil is pumped into that seed to set the stage for successful reproduction and the seed (especially following soaking or sprouting) represents a rich source of enzymes. The king of all seeds is from an ancient cereal grain called **chia**.



Raw fruit and vegetables naturally contain the enzymes that help digest them.

The King of Seeds

A few months ago I began to research an ancient seed that has recently made a remarkable comeback as a 21st century superfood. **Chia** is a seed that was considered sacred by the Aztecs and other South American cultures. Aztec warriors used to head off to do battle, sustained with a single pouch of chia seed strapped to their waist and the legendary Indian long distance runners also traveled light with just chia for sustenance. It seems hard to imagine how fit, active men could chomp on a bit of birdseed and thrive, but it becomes a little clearer when we look at the unique qualities of this food and consider its powerful nutritional punch. Imagine a food with **5 times** more calcium than milk, **twice** the potassium of a banana and **three** times more antioxidants than blueberries. This same food has more iron than liver and unusually high levels of boron to ensure optimum performance of the luxury levels of calcium. Chia contains over **20%** protein, including all eight essential amino acids and this is **2 to 3** times higher than levels in other grains. This wonder food also contains **15 times** more magnesium than broccoli, **7 times** more vitamin C than oranges and 6 times more fibre than bran and this is just the start of the story.



Amazing nutritional value in this tiny seed.

The Critical Importance of Omega 3 Fatty Acids

Your ratio between omega 6 fatty acids and omega 3 fatty acids is actually one of the key indicators of robust health. That ratio should be **2:1** in favour of omega 6 acids but that is rarely the case. The average in Australia is **20:1** while the Americans have blown out to **26:1**. How has this ratio been so badly compromised and why is it so important? Well, the fact is that we were never designed for the huge intake of omega 6 associated with vegetable oils and margarine and this unbalanced oil is everywhere. It's in most of the fast foods, baked goods and snack foods and even our meats are now dominated

by omega 6 fatty acids (when meat has always been a good source of omega 3). This is because most of the supermarket beef comes from feedlots and these confined animals are fed omega 6-rich grains instead of the omega 3-dominated grasses they were supposed to be eating.

Your body has a natural inflammatory cascade where inflammation is activated to address an infection or injury and that is followed by an **anti-inflammatory** response to heal the issue. There are nutritional building blocks required for each of these two stages. The building blocks for the inflammatory response are omega 6 fats while the anti-inflammatory side of the equation requires omega 3s. What happens when you have **10 times** more of the inflammation builders compared to the healers? You get all kinds of local and systemic inflammation. In fact, **inflammation** is now linked to all of the major degenerative diseases.

Chia is the highest plant source of omega 3 fatty acids (**over 62%**). In fact, it has **8 times** more omega 3 fats than salmon on a weight-to-weight basis. It also has a nice balance of omega 6 fats to improve the balance of both of these essential fatty acids. Unsaturated fats improve **oxygen transport** and delivery to cells tissues and organs and they are critically important for the functioning of the **adrenal** and **thyroid** glands. They are important for healthy reproduction and nourishment of skin and nerve cells and they are responsible for converting carotenes into vitamin A. The fatty acid component of chia is certainly impressive, but there's more!

The Joy in the Gel

It is so much easier to gain weight than lose it. If we factor in the pleasure to pain ratio, we see that the whole yoyo dieting process is skewered very much on the pain side. It takes about 3 times longer to lose weight than gain it and it requires a lot more effort, for a lot less fun! Any tool that can reduce the pain and improve the efficiency of **weight loss** is worthy of serious consideration and this is a major benefit of chia.

Food displacement products have proven a popular tool for weight loss as they expand in the gut giving the sensation of fullness and reducing the desire for food. The only problem with this technology is that these materials rarely have any nutritional benefits so when they replace food, you **lose nutrition!** Chia is a rare exception to the rule. If you add a tablespoon of chia to a glass of water and leave it for ten minutes then it turns into a thick gel, which fills the stomach cavity and reduces the need to eat. However, this food replacement gel is so jam-packed with goodies that you actually get more nutrients than the average meal and it contains **no calories**. It is also tasteless, so it can be added to freshly squeezed



Traditional food replacement products spell poor nutrition, but this is not the case with chia gel.

juices for even more nutritional impact. Children love the resulting orange, apple or watermelon “jelly” and supplementing suddenly becomes fun (incidentally, if you are making your own watermelon juice be sure to leave in the melon seeds so they are crushed in the juicer to release their impressive lode of magnesium, iron, zinc and omega 3 fatty acids).

However, this chia gel is more than a highly effective weight loss tool. It represents a source of **hydrophilic colloids** sorely missing in many diets. These glue-like, gelatinous substances are essential to cellular health as they store and slowly release moisture and nutrients and help maintain cellular hydration and associated electrolyte balance. **Raw food** consists largely of hydrophilic colloids but this is not the case when this food is cooked. The cooked food is consequently less able to absorb digestive juices and this is why the addition of gravy to a meat meal introduces the hydrophilic colloid called gelatin which greatly improves protein digestion.

Lower Blood Sugar, Less Weight Gain

The weight loss potential of chia extends beyond its food displacement properties. One of the most researched

and effective weight loss strategies is to eat according to the **Glycemic Index** of various foods. Glycemic Index (GI) is based upon a food’s capacity to spike blood sugar. Glucose has a **GI of 100** so all foods are ranked relative to glucose. The idea is that you can eat as much food as you like in the low GI range (less than 50) and a little less of the mid GI foods (between 50 and 65). However, you should seriously restrict your intake of high GI foods (between 65 and 100). Fruit, vegetables, legumes and pulses fall into the low range while more processed carbohydrates are to be avoided due to their high GI. When a food rapidly increases blood sugar levels, the pancreas produces insulin to manage these sugars (as excess blood sugar is toxic to our systems). The excess is converted to glycogen and then to fat and this conversion is so effective that excess carbohydrates will build fat more readily than saturated fat. In fact, ironically, the fat produced from excess carbohydrates is a long chain fatty acid called palmitic acid, which is the very worst form of saturated fat. In this context, our carbohydrate-loaded food pyramid is terribly misguided and is a key link to the **obesity epidemic**. This “fat from carbos” phenomenon is perfectly exemplified in the case of feedlot beef vs. grass feed beef. The confined animals fed unnatural levels of carbohydrates, in the form of grain, contain 50% saturated fat while their grass-fed counterparts contain just 10% saturated fat.

Lower GI for Longevity

A low GI diet is not only about lowering blood sugar and reducing weight gain; it is also critical to a healthy, extended life. The very latest in **longevity research**, involving 3 separate studies of centenarians, revealed that the only common denominator amongst these lucky souls who survived so long, was low blood insulin levels! It seems that we have a limited number of cell divisions that comprise a lifetime and insulin **increases cell division** and consequently shortens your potential lifespan. This is why low calorie diets have been shown to offer such profound life extension benefits in the multiple animal studies to date. In fact, the first primate study involving calorie restriction of **2000 calories** per day has just been completed and it mirrored the results found in rats and guinea pigs (often involving as much as a 250% increase in life span). Ok, so we understand the importance of avoiding foods that spike blood sugar and sponsor insulin production, but what’s chia got to do with it? Well, chia contains **30% fibre**, much of which is soluble, so it can be added to high GI foods to seriously reduce their blood spiking capacity. Potatoes, for example, are Australia’s favourite vegetable but they have a much higher GI than table sugar (a GI of 90 to 95 vs. a GI of 70 for pure sugar) so they will make you fat and shorten your life. However, if you were to soak chia seeds and introduce a little of the gel to your mashed spuds the GI of this staple food is dramatically lowered and the problem is solved. Alternatively, you could add a third shaker to your table

and sprinkle the tiny chia seeds all over mid and high GI foods along with the salt and pepper! This simple practice will slow the absorption of carbohydrates and reduce destructive blood sugar spikes.

The Rationale for Keeping Regular

Chia has another major benefit. It is a wonderful tool to ensure **regular bowel movements** as it contains so much soluble fibre. It is as effective as psyllium for this purpose but unlike psyllium it offers so many other benefits. The hydrophillic gel helps to cleanse and soothe the colon and absorb toxins while lubricating and strengthening peristaltic action. The hydrating effect of the gel optimises the performance of beneficial gut flora responsible for activating the rhythmical contractions (peristalsis) that keeps the food and waste moving along the digestive tract. The traffic jam, called **constipation**, can often involve a combination of compromised probiotic organisms combined with insufficient moisture to keep the system lubricated. Chia addresses both issues. Constipation is no small matter and it should ideally be addressed as a matter of urgency. Ideally we should have two bowel movements each day but if we have less than three bowel movements per week then we are technically constipated. This is an issue affecting **63 million**



Chia helps to avoid constipation in several ways.

people in North America each year. The more obvious health issues include hemorrhoids, colon problems and urological issues, however there are other problems. A constipated system is one in which the transition time of **toxic wastes** has slowed down. If the waste remains for days in the bowel then it can putrefy and ferment and there is a possibility for reabsorption, particularly in the case of hormone waste. There appears to be a significant relationship between the amount of time your body is exposed to putrid waste and your risk of developing disease.

Quelling Free Radical Fires

There are several theories of ageing including those linking longevity to gene inheritance and hormonal imbalance. However, the most popular of these explanations is the **Free Radical Theory of Ageing**. In this approach, ageing is seen as an accumulation of free radical damage until that damage sponsors a degenerative disease that eventually kills us. The most productive strategy is to increase our intake of **antioxidants** to quell these free radical fires. Free radicals are a natural byproduct of the oxidants generated through breathing. If you are breathing far more often, as in extreme sports, then you are producing many more free radicals and you need a much larger intake of antioxidants to compensate. That is why a large Yale study found significant health gains in exercising sufficiently each week to burn **2000 calories** but those who burnt **3500 calories** a week increased their risk of degenerative disease. Free radicals are also coming from environmental toxins including the **74,000** registered chemicals and their cocktails that are now part of our world. We have a far greater need for antioxidants in Century 21 than at any other point in human history and yet we are reducing our consumption of fruit, vegetables and wholefoods. We are also reducing antioxidant levels in many of our foodstuffs through food processing, hybridization and the soil demineralization often associated with industrial agriculture. If you develop cancer and end up seeking help from a natural health professional (often as a last resort), you will usually be advised to urgently increase your antioxidant intake via fresh fruit and vegetable juices. Why not consume antioxidant-rich foods before that happens?

The scientific measurement of the antioxidant value of a food is called the **ORAC score** (Oxygen Radical Absorbency Capacity). The higher this score, the more medicinal the food involved. Berries, headed by blueberries, top the ORAC charts but dark chocolate is also an ORAC high-flier (as long as it is completely free of milk products). Blueberries have a score of 2600 per 100 grams while the ORAC score for Chia seeds is **10,250**. However, if you soak your chia seeds overnight, that figure jumps to a remarkable **22,000!** The soaking process initiates sprouting which dramatically increases the nutritional value of all seeds.

Sustained Energy and Fluid Delivery - Enhanced Endurance

Chia has a legendary reputation as a remarkable **endurance food**. It was called "the Indian runner's food" in South America, as the Aztecs would literally run coast to coast fuelled solely by chia seed. These unparalleled athletes apparently played a sport where the goal posts were 60 km apart (making footy look like a pussy game!). More recently, the famous fitness guru **Paul Bragg**, who died in a body surfing accident at 95 years of age, conducted trials into chia and endurance. In **James Scheer's** book, "The Magic Of Chia" there is a description of Paul Bragg's trial. Paul designed an experiment involving two randomly selected, 12 person teams who were to embark upon a grueling **36 hour climb** to the top of a local mountain. The teams, consisting of 8 men and four women were given different sustenance for the difficult task. One group was given the freedom to eat whatever they believed would deliver optimum performance during the hike. The other group was only supplied with chia seed. All members of the chia team reached the summit four hours and twenty-seven minutes ahead of the other group, only five of whom were able to complete the climb. In 1995, fifty two year old Indian runner, **Cirildo Chacarito** won a 160 km race in California in just 19 hours, 37 minutes and three seconds. He beat hundreds of other competitors whom he had given a 30-minute head start. He wore homemade shoes made from tire treads, to the embarrassment of the sports shoe company sponsoring the event. His **secret weapon** was chia gel which he consumed throughout the race.

There are several reasons why chia is the perfect supplement for sports people. The gel that forms when chia seeds are combined with water creates a physical barrier between the carbohydrates and digestive enzymes, which slows the release of energy from this power food. There is no energy-sapping insulin spike and the water-retaining capacity of the gel boosts **hydration** and helps maintain **electrolyte balance**. The high ORAC score also delivers much-needed antioxidants to neutralize free radicals created from the extra oxygen intake during sports events.



The Top Ten Chia Tips

- i. If you **soak** your chia seed overnight you will double the antioxidant value.
- i. Combine chia seed with juices to form a satisfying, nutrition-packed breakfast that can serve as a **meal replacement** when dieting.
- i. Make your own performance enhancing, super hydrating, antioxidant rich, **electrolyte gel** with the following one litre recipe. The night before the event whisk 3 tablespoons of chia seed, a half-teaspoon of NTS Wonderfoods Vitamin C Powder™ and a one third of a teaspoon of Nutri-Salt™ into 900 mL of fresh carrot juice.
- i. Use chia to help overcome your **addiction to sugar** (the most addictive of all substances). It is the rise and crash of blood sugar that fires the addiction. Chia promotes a measured release of carbohydrates so you don't induce reactive hypoglycemia and crave sugar (because effectively, you now need it!)
- i. Expand your condiments to include three essentials. A salt shaker, a pepper shaker and a **chia shaker**. Sprinkle chia on everything for the multiple benefits.
- i. Add chia gel to your potatoes before mashing or coat the steamed or roast **potatoes** with seed. This will halve the high GI of potatoes and turn a sugar spiking liability into nutritious food.
- i. Make a juice gel and consume it throughout the day to deliver **sustained energy** and mental alertness without the dead spots.
- i. Use chia as a **gluten free**, nutrient dense alternative to grains like wheat that are grossly overused and can promote food sensitivities and allergies.
- i. Add equal amounts of chia gel to butter and **cut calories** by 45% with no change in taste or satisfaction. The saturated fat improves omega 3 uptake.
- i. You can use chia as a **food extender**, a nutrient enricher and a calorie cutter. Add chia gel to porridge, omelettes, mayonnaise, peanut butter, dips, yogurt, soups, milk shakes, gravy and home baked goods including bread.

In Conclusion

I can think of no other food that features this unique package of benefits. In a world plagued by insulin resistance, inflammation, obesity and lifeless, denatured food, we have a saviour. A tiny, Aztec seed, recently rediscovered as a **21st Century superfood**, can successfully address all of these issues.

For more information about the supply of chia seed please contact NTS on +61 7 5472 9900 or visit the NTS website www.nutri-tech.com.au