Flourish

HEALTHY BODY, MIND, AND SPIRIT

The Impact of Cerebral Concussions

Emotional Stress and the Brain

Naturopathic Perspectives

Supporting Your Ketogenic Journey

Special Promotions Inside!

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Autumn 2019

Editor's Letter

Thanks for picking up *Flourish* or giving us a glance online. We trust you all enjoyed the great summer weather and are well on your way to settling into the return-to-school and work routines, synonymous with autumn's arrival. Our fall issue of *Flourish* gets a little cerebral, with articles focusing on the impact of concussions, emotional stress and the brain, and nutrients that can have positive effects on cognitive recovery and performance. We also feature content with insights into current advances in natural health research in a more digestible format for readers.

We also examine the "pros and cons" to consider when adopting a ketogenic lifestyle, along with supplementation worth considering when embarking upon this journey. Featured recipes from our culinary contributors include naturally sweet and decadently savoury snacks for entertaining or "on-the-go" nutrition. We even have a recipe to help use up those zucchini your neighbour keeps dropping off at your front door!

We're excited to introduce the "Ask Gord" page, where our health-product specialist calls upon his industry experience and vast network of colleagues to respond to your health- and supplement-related inquiries. We can only publish a few, but ensure everyone will get a response!

Here's wishing you a bountiful fall and memorable holiday season.

To your health!

Sophia Golanowski, BCom, MBA
Editor-in-Chief

Flourish

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Letters to the Editor

Red Reishi
A History of Benefits

What Warnings Are There for Red Reishi Consumption?

Generally well tolerated, reishi has caused isolated cases of intolerance, mainly due to an allergic irritation caused by chitin. This side effect is eliminated by steeping reishi with hot water, which disolves chitin. This explains why traditional extracts are preferred for therapeutic use. Slightly hypotensive, reishi is contraindicated for people with a history of low blood pressure. Also, its possible anticoagulant properties are worth considering in case of thrombocytopenia, gastric ulcer, or intestinal bleeding following surgery or childbirth. Its effects could theoretically be comparable to those of other anticoagulant, antiplatelet, or hypotensive drugs; in this case, consult your health-care practitioner. In addition, starting supplementation gradually helps minimize any natural detoxification symptoms (dizziness, headache, skin irritation, ear/nose/throat dryness, nausea, or diarrhea); discontinue use of reishi if these symptoms occur after three months of use. Finally, people taking multiple medications or immunosuppressants, those with immune disorders, and pregnant or breast-feeding women should consult their health-care practitioner before using red reishi.

One of the Most *Important Relationships* You'll Ever Have

If I Work a Serving of Yoghurt Containing 1 Billion Probiotic Cells into My Daily Routine. Am I Getting Enough?

Although 1 billion may seem like a lot, the majority of these are unlikely to survive passing though the harsh acids of your stomach. The amount that will actually get to your intestines is miniscule compared to what is needed to maintain healthy intestinal flora. The main benefit you're getting is a good source of dietary calcium as well as healthy fats (unless you choose a reduced-fat version). Probiotics in supplement form contain up to 120 billion live cells per capsule, sourced from multiple, clinically researched strains, for a broad spectrum of health benefits. And to ensure they reach your intestines to do their work, choose one that is enteric-coated.

We always like to hear from you...
We appreciate your feedback, let us know is you have any questions about the articles we publish.

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The Impact of Cerebral Concussions

by Guillaume Landry, MSc, Naturopath

"I Played the Best Game of My Life, but Now I Can't Remember It..."

So testified 17-year old soccer player Jeremy Gouin-Gosselin in a Radio-Canada (CBC) investigation on concussions.

Underdiagnosed, concussions represent a real public health problem that Dave Ellenberg, a neuropsychologist specializing in concussions, describes as a "silent epidemic." It is estimated that between 1.6 and 3.8 million people suffer annually from concussions in the United States alone—300,000 of which are due to sports.

Severe, Long-Term Trauma

A concussion is a type of brain injury often caused by a blow to the head, neck, face, or body. During impact, the brain moves within the skull, deforming and breaking nerve fibres that are pushed against the inner skull wall. This disturbs chemical and electrical activity in the brain over several days or even weeks. Not only concussions but also repetitive, smaller traumas called subconcussions (one can suffer from a concussion without losing consciousness) can cause serious brain damage and lead to changes in how we think and feel.

The clinical picture of a person who has suffered from a concussion manifests itself and evolves differently according to age, sex, number of prior concussions, time since last hit, and possibly genetic predisposition.

Table 1: Percentage of Athletes Indicating Signs and Symptoms Associated with a Concussion

Headaches	85.5%
Dizziness	64.6%
Trouble with Concentration	47.8%
Confusion and Disorientation	39.5%
Blurred Vision	35.5%
Sensitivity to Light or Noise	30.9%
Tiredness	27%
Nausea	24.9%
Amnesia	20.2%
Losing Consciousness	5-9%

Sources: Guskiwicz et al (2000); Castle et al (2012)

Difficulty with concentration or articulation, inappropriate emotions, empty staring, and impaired vision can last several days after a hit. Approximately one in five people will experience their first symptoms during the 24 hours that follow a blow to the head. During this period, brain dysfunction is prolonged because neurophysiological recovery time takes longer than clinical recovery. The long-term risks are very serious: chronic traumatic encephalopathy (degenerative brain disease), memory loss, impaired concentration, nervous breakdowns, judgment problems, or dementia are among the possible consequences. In addition, the vulnerability of a person who has suffered from a concussion is compounded: they become five times more likely to develop a new one!

Berlin, 2017: A Reserved Scientific Consensus

In 2017, the scientific community established the Berlin Consensus Statement, which fortunately defined a framework for concussions. But it remains only a declaration of intent by various specialists - more needs to be done! For example, even though it is estimated that 80% of concussions go undiagnosed, there are no clear criteria to guide their clinical evaluation. The statement recommends rest until the symptoms go away, yet the statement also leaves the door open for sufferers to resume their normal activities so long as symptoms do not worsen - this is disputed by various clinicians. The statement also lacks an explicit guide, process, and clear timetable, and is missing any mention of children's or academic level sports.

The Flip Side

Aside from accidents, sports remain the leading cause of concussions, and this unfortunately does not only include professionals but children, too. In the United States, half of sports-related concussions among youths happen to those between 12 and 15 years old. Football is the sport that poses the biggest risk, followed by hockey, soccer, and basketball, not to mention combat sports. It is estimated that contact sport athletes have a 20 percent risk per season of suffering from a concussion.

In addition, studies indicate that one out of two athletes hide their symptoms to avoid being removed from the game, and this exposes them to second-impact syndrome—extremely dangerous, as it can lead to irreversible disability and even death. In the world of spectator sports, the danger of concussions seems to keep being underestimated. Is it possible that more importance being placed on the "spectacle" and the "economics" of sports, rather than on athletes' health? It is difficult for sports federations to determine the actual number of concussions suffered by amateur athletes. Also, there is a lack of application of rigorous protocols for detection, management, as well as regulations to safely return to the game.

Prevention Tips

- Wear your safety belt in motor vehicles, and drive responsibly
- Avoid violence
- Arrange living space safely, especially among seniors
- Wear helmets and other protective equipment certified for risky sports
- Observe the rules of the sports
- Know and practice an action plan in case of concussion

Among other references, Parachute Canada provides practical guidelines for proper sporting behaviour to minimize the risk of concussions. Organised sports associations and medical institutions also have concussion management protocols available online. Anyone coaching or participating in risky sports should be well versed in these.

What to Do in the Event of a Concussion

First aid protocol states: stop the activity or sport, stay with the injured person, and call a health-care professional. If possible, apply the detection protocol and concussion management and in case of convulsion, loss of consciousness, respiratory disorders, apathy, or numbness, call for emergency responders. In all cases, assessment and medical monitoring are essential.

Rest to Heal

The first answer, considered the most effective, is complete rest: Do not return to high-risk activities or sports until all symptoms have gone away and a physician has given authorization. The rest must be physical and mental by eliminating as many stressors as possible (screens, reading, shows, parties, loud music, drugs, alcohol, junk food, etc.). According to the Concussions Institute, monitoring persistent symptoms should be done within 10 days for any person. Few data exist on pharmacological treatments, and interventions are conducted mainly in psychology and surgery (cervical, vestibular). For young people, the return to school will be very gradual and under the supervision of medical staff and teachers. Athletes should consider rehabilitation through careful, gradual, and supervised exercise (physical and/or mental).

Naturopathic Tools to Optimize Healing

Concussions have many similarities with neurodegenerative diseases like chronic inflammation, increased oxidative stress, and reduced capacity to generate ATP in neurons. Treating these three key components of concussion is crucial for treatment. To do this, nutrition and natural health products can bring significant benefits.

Ketogenic Diet

Interesting facts: Medical protocols for concussion or brain injury call for eliminating sugar from one's diet within 24–48 hours after the incident, because hyperglycemia exacerbates the complications of cerebral ischemia, concussions, and brain damage. Therefore, insulin is administered to tightly control glucose in such contexts. Under the conditions of degradation of glycolytic metabolism after brain injury, glucose becomes a less favourable energy substrate. Ketones are the only natural substrate alternative known to glucose for brain energy metabolism. Although it has been demonstrated that the brain can metabolize other fuels (such as pyruvate, lactate, and acetyl-L-carnitine), ketones are the only endogenous fuel that can significantly contribute to brain metabolism. It is therefore understood that the ketogenic diet—comprised of 70% fat, 20% protein, and 10% sugar—may be suitable in cases of concussion. With this diet, the brain gradually stops consuming glucose as an energy source and begins to depend on ketones, or by-products of fat metabolism. The important impacts of this scheme are reduced oxidative stress, anti-inflammatory protection for the brain, and increased energy.

Benefits of the Ketogenic Diet in Animal Studies

Decrease in

- Formation of reactive oxygen species
- Neuronal death
- Cerebral edema
- Significance of heart attacks

Increase in

- Better recovery after concussion
- Results of improved cognitive tests
- Oxidation of NADH and production of ATP
- Brain-derived neurotronic factor (BDNF)
- Glutathione and glutathione peroxidase activity in hippocampus

Available human data are limited but promising.

Finally, for concussions, the ketogenic diet is a ***must***—at least until symptoms disappear. MCTs (medium-chain triglycerides) are an ideal way to ensure the increased fat intake required as they are easily metabolised for energy production. MCTs may have a mild laxative effect if the initial dose is too high, so start slowly and gradually increase the dosage (MCT dose: 15–90 ml per day = 1–6 tablespoons).

Other Beneficial Nutraceuticals for Concussions

Acetyl-L-Carnitine (ALC)

ALC is a fat carrier at the cellular level, which is particularly useful for ketogenic diets. ALC helps maintain optimum energy production in the brain, as it passes the blood-brain barrier and affects the entry of fatty acids into the mitochondrial matrix, where they are used as substrates for energy production. The acetylated form of L-carnitine is preferred, due to L-carnitine's very low bioavailability (ALC dose: 750 mg three times per day starting at two times daily).

N-Acetylcysteine (NAC)

A study focused on United States soldiers returning from Iraq with mild traumatic brain injury caused by an explosion were administered 1,000–1,800 mg of NAC per day for seven days. NAC supplementation relieved 86% of the soldiers from their symptoms, versus just 42% for the placebo group. NAC confers neuroprotection and improves bioenergetic and behavioural results following a concussion.

Omega-3s

Turning down the heat of inflammation is important in the case of concussions, and omega-3 fatty acids are ideal for this purpose, thanks to eicosapentaenoic acid (EPA). As for their docosahexaenoic acid (DHA), it is the precursor of the BDNF (brain-derived neurotrophic factor), but it is important to choose a product with more EPA than DHA, with an ideal ratio of 2:1 (2 g omega-3s per day). According to Noguchi et al (2017), omega-3s have powerful therapeutic effects and ensure the survival of traumatized animal brain models.

Vitamin D_3

Vitamin D therapy reduces inflammation and neuronal injury after concussions. One study showed that combination therapy was superior to progesterone alone or a placebo for improving outcomes after severe trauma. Another study showed that vitamin D deficiency exacerbates

posttraumatic inflammatory response. According to Jamal et al (2016), a vitamin D deficiency is frequently observed in patients after brain trauma, and it is associated with impaired cognitive function and more severe symptoms of depression. Also, the quality of life experienced following a concussion has been shown to be generally better in patients with optimal vitamin D levels than those deficient in vitamin D. Finally, Lee et al (2019) have shown that vitamin D supplementation significantly improved cognitive outcomes in the weeks following trauma and in the long term (dose: 2,000 IU/d; goal: 75 ⟶ 150 nmol/L [25OHD]).

Lion's Mane

Among nature's many wonders, some fungi can stimulate synthesis of nerve growth: *Hericium erinaceus*, also called the "hedgehog mushroom," is one of them. In animal models, it is useful in the prevention of cognitive disorders related to *beta*-amyloid protein, such as Alzheimer's disease. Lion's mane supports myelination, the process that allows myelin to protect and optimize neuron operation. Routinely used in traditional Asian medicine for brain treatment, this mushroom has demonstrated in clinical studies its usefulness for mood regulation and improvement of mild cognitive impairment.

Conclusion

All situations involving a risk of concussion—particularly sports involving violent impacts—require increased vigilance but also prevention. Concussions, however many, are not trivial: They require being prepared to take positive action, making informed choices, and relying on a multidisciplinary medical team to monitor symptoms.

Concussion-prevention practice guides can minimize risks. As for detection protocols, management, and safe return to play, they can help prevent this trauma with all the seriousness and professionalism that are merited. Finally, natural remedies presented in this case contribute to the benefits of rest: the first and essential step to healing.

Visit our blog for the full article including references: newrootsherbal.com/en/blog

Climate Change Is Depleting the Nutritional Value of Our Food

The greenhouse effect is exerting a negative impact on the nutritional value of plant-sourced food. Levels of protein and minerals including iron, magnesium, and zinc are being depleted in favour of increased levels of carbohydrates. This trend is poor timing from the perspective of the global epidemic of obesity and for health in general. Vitamins B_1, B_5, and B_9 (critical for metabolism, detoxification, nervous system function, and more) and carotenoid levels in plants also seem to be affected by climate change. These nutritional deficiencies support the use of vitamins, minerals, and nutraceuticals to ensure optimal nutritional intake in todays turbulent times.

Ref: Gazella, K.,A. "Climate change and food quality. How a changing climate impacts the nutritional value of food." *Natural Medicine Journal*, Vol. 11, No. 8 (2019).

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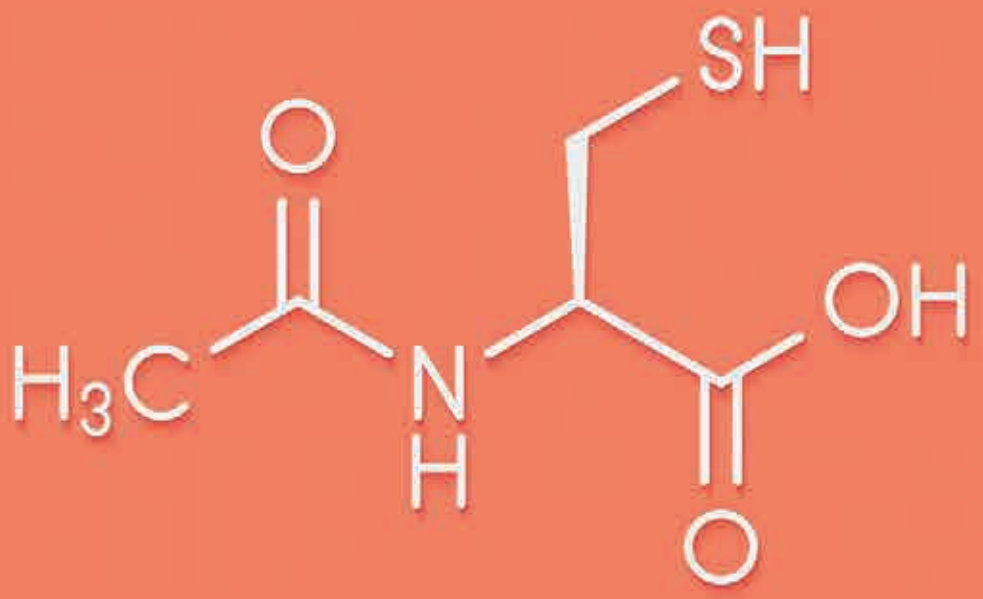

N-Acetylcysteine (NAC)

Multipurpose Antioxidant

by Dr. Philip Rouchotas, MSc, ND,
and Dr. Heidi Fritz, MA, ND

N-Acetylcysteine (NAC) is a *N*-acetyl derivative of the amino acid L-cysteine and precursor for glutathione (GSH) in the body, whereby it protects vulnerable tissues and facilitates safe detoxification. Since glutathione is generally poorly absorbed when administered orally, NAC is the preferred method for increasing glutathione concentration. Supplementation with NAC has been studied in a variety of contexts, including (unsurprisingly) for liver and kidney protection, as a mucolytic in the respiratory system, an insulin sensitizer in various metabolic conditions, an antioxidant for improving fertility, and in the setting of mental health. This article reviews some of the evidence for NAC in these conditions.

Hepatoprotective Effects

N-Acetylcysteine (NAC) is best known as the mainstay of therapy for acetaminophen (Tylenol®) toxicity. Acetaminophen overdose can result in acute liver failure and death. NAC has FDA approval for the treatment of potentially hepatotoxic doses of acetaminophen, and it is almost 100% effective if given within eight hours postingestion. NAC has also shown effectiveness in non–acetaminophen–induced hepatotoxicity. In one study of 80 patients with acute liver failure not caused by acetaminophen, intravenous NAC was compared to placebo. In this study, mortality was 28% among patients receiving NAC, compared to 53% among the placebo group. Among survivors, there was also a shorter duration hospital stay, indicating better recovery.

Studies have also indicated that NAC may help protect the kidneys. A randomized study found that supplementing patients with chronic obstructive pulmonary disease (COPD) who were scheduled for coronary artery bypass grafting with 900 mg daily for seven days before their bypass surgery significantly decreased markers of liver and kidney damage, measured as lactate, ammonia, creatinine, and blood urea nitrogen (BUN) levels. Finally, as a precursor or prodrug for glutathione, NAC helps scavenge free radicals, binds metal ions into complexes, and supports detoxification pathways.

Mucolytic Effects

NAC contains a double sulfide bond, and this structure enables NAC to break up and thin mucus, making it easier to expectorate and expel from the lungs. NAC is approved for use in conditions with abnormal mucous secretions such as pneumonia, bronchitis, cystic fibrosis, tracheostomy patients, postoperative pulmonary complications, posttraumatic chest conditions, and before diagnostic bronchoscopy to help with mucous plugging. Studies show that supplementation with NAC in patients with COPD can reduce hospitalization and improve lung function. In a prospective trial, supplementation with 600 mg twice daily oral NAC treatment for one year was associated with improved lung function (FEV1, FEV1% predicted), respiratory symptom score, and the result of six-minute walking distance test in a subset of COPD patients.

Furthermore, although NAC is not an antibiotic, it possesses antimicrobial properties due to its ability to break down bacterial biofilms, which are essentially membranes that the bacteria secrete around themselves that allow the bacteria to "hide" from the immune system and evade destruction. Biofilms are thought to be one mechanism involved in the perpetuation of chronic infections.

Neuroprotective Effects

NAC crosses the blood-brain barrier and has good bioavailability. Due to neuroprotective effects, an explosion of human trials has evaluated NAC for management of a wide array of common mental health concerns including schizophrenia, bipolar disorders, depression, Alzheimer's, autism, and substance abuse (cannabis and cocaine). In a randomized study, patients with schizophrenia supplemented with 1000 mg NAC twice daily achieved significant improvement in Positive and Negative Symptom Scale (PANSS), Clinician Global Impression (CGI), and akathisia. In a similar study in patients with obsessive compulsive disorder (OCD), supplementation with NAC was associated with significantly improved mean Yale-Brown Obsessive Compulsive Scale score and Clinical Global Impression-Severity of Illness scale score. A total of 52.6% of NAC patients versus 15% of placebo patients achieved a "full response." In patients with bipolar, supplementation with 1000 mg twice daily was associated with significant improvement in several symptom-rating scales by eight weeks, compared to placebo. Lastly, a randomized trial in cannabis-addicted patients found that supplementation with NAC 2400 mg daily for eight weeks more than doubled their odds of having a negative urine test for cannabis at eight weeks.

Fertility Enhancement

Finally, NAC has emerged as having a key role in improving fertility, in both men and women. Supplementation with NAC alongside clomiphene citrate has been shown to improve endometrial thickness as well as ovulation and pregnancy rates in women with polycystic ovary syndrome. NAC is thought to have an antioxidant effect, protecting the egg cell and sperm cell from damage, and it is also thought to improve insulin sensitivity, which can underlie infertility in both women with PCOS as well as men with low sperm parameters. In men with idiopathic infertility, supplementation with NAC has been shown to improve volume, motility, and viscosity of semen, and improve its antioxidant capacity. A similar study demonstrated improvements in hormones including FSH, testosterone, and an improvement in all semen parameters.

Conclusion

We see that supplementation with *N*-acetylcysteine can be beneficial in a number of conditions such as liver and kidney conditions, COPD and respiratory problems, brain and neurological conditions, as well as male and female infertility. NAC is typically dosed at between 1000 and 2000 mg per day.

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Emotional Stress and the Brain

Naturopathic Perspectives

by Dr. Chris Habib

Introduction

We've heard it all before: Stress is a normal part of life. Some stress is good for us because it helps us get motivated, be happy, and accomplish our goals. This is often called *eustress* to distinguish it from what people commonly mean when they say they are stressed (usually feeling bad or overwhelmed). Being "stressed out" certainly has negative connotations. In this article, we'll discuss some of the underlying mechanisms of stress in the brain as well as what can be done to move towards better health and a happier life.

Emotion Evolution

Emotions generally help us to communicate with our social environment. They are one of the ways that we figure out what's happening around us, and they help us decide how to behave in various circumstances. They give meaning to what we experience with our senses and in our interactions with others. Why do we have emotions in the first place? Science has suggested that emotions evolved over time. We have a more primitive animal brain and a more evolved brain that helps us engage in higher-level cognitive functions. The more primitive animal brain helps us stay alive, so it can help us feel emotions like fear. As a result, it can sometimes hijack our higher cognitive abilities, even when we don't want it to. In other words, we may physically feel like we are in a life-threatening situation, where drastic action is required, even though it's just a boardroom meeting.

The fast pace of the modern world presents us with sensory inputs that can overstimulate the brain. In fact, we are not built for the modern world at all, which makes it that much more difficult to regulate our stressors properly. It can be a significant challenge to maintain a balanced mood or to maintain emotional stability. The myriad of psychological stressors we face can be challenging to process in a calm and collected manner, especially if our primitive brain is taking control. There's a popular adage among those who study the brain: "Neurons that fire together, wire together." This means that the longer we are exposed to significant stressors in our life, the stronger our brain will make these unhealthy links. That will make it easier to get back into an unpleasant state and it will be even stronger, leading to the potential for a snowballing effect.

The neurotransmitters that facilitate more optimal psychological health help to produce a positive mental outlook, a balanced perspective, and the ability to cope with everyday stress. They rely on a number of underlying nutrients to get produced and to function properly. These nutrients are present in food, but during periods of heightened stress or during periods of extended stress, the body can get exhausted! Additional supplementation can be helpful to ensure that the body has adequate amounts to meet its needs. We'll discuss some of these below, as well as other natural strategies.

Lifestyle Strategies

First, let's discuss lifestyle strategies that can help promote optimal emotional health. Diet, or the selection of foods you feed yourself with, is a top priority. The old cliché "you are what you eat" is literally true. If you're constantly overdosed on sugar and caffeine, you can bet that you'll be experiencing more distress. So, consume a balanced diet that contains fruits and vegetables, adequate protein, healthy fats (like olive oil and avocado), and an appropriate amount of calories for your size and activity. You will have created a superb physical foundation for health.

Next is physical activity. You can eat beautifully, but if you are sedentary, you're not optimizing your health. Physical activity will not only protect you from some physical health problems like heart disease, high blood pressure, or osteoporosis, but it will also help with self esteem and stress management. Studies have shown that it is likely to reduce depression and anxiety. The guidelines suggest that you aim for 30 minutes of moderate activity, five times a week.

Sleep is the next pillar of the basics of emotional health. You can eat well and exercise, but if you're not sleeping, your brain will still be miserable. Develop a solid bedtime routine and get adequate amounts. If you typically have trouble sleeping, consider factors that promote sleep: a dark, cool environment; ear plugs; a face mask; and comfortable mattress and pillow.

The last pillar is mindfulness. Mindfulness means paying attention to the present moment and is usually paired with meditation, known as "mindfulness meditation." Paying attention to the present moment is really the only way to enjoy life. If you're stuck regretting the past or if you're constantly worrying about the future, you'll forget to enjoy the present. At some point, you have to be satisfied with what you have. This takes a tremendous amount of effort, because evolution has built us as problem detectors. We must actively work to change our perspective and have gratitude and appreciation for the experiences we have. I suggest you work with a phone app or with an instructor. If you've never done anything like this before, it can be quite frustrating, but with practice, it gets easier. The bonus is that no matter how much you try, studies have shown the benefits seem to endure.

Supplement Options

gamma-Aminobutyric acid (GABA) is a calming neurotransmitter: It helps support a healthy response to emotional stress and may help calm anxious thoughts and intermittent overstimulation and excitation in the brain. It may be helpful for mitigating occasional feelings of anxiousness and facilitating proper focus. L-Glutamine is an amino-acid building block for GABA. Glutamine is a conditionally essential amino acid, meaning that during times when a healthy response to stress is needed, the amount obtained

from food may not be sufficient, and supplementation may be beneficial.

L-Theanine and taurine are amino acids that may aid in bringing calm and relaxation. Taurine is derived from the amino acid cysteine. Tyrosine is the precursor to dopamine, a neurotransmitter associated with learning, attention, and mood. Healthy dopamine levels support the ability to apply focus and attention as well as maintain a positive mental outlook. Tyrosine is also an essential component of thyroid hormone, with the thyroid gland being a key regulator of the body's metabolism. (Appropriate amounts of thyroid hormone may support steady energy levels.)

5-Hydroxytryptophan (5-HTP) is a precursor to the neurotransmitter serotonin, commonly called a "feel-good" neurotransmitter due to its role in promoting a positive mental outlook and a sense of wellbeing. Serotonin, in turn, is the precursor to melatonin, a hormone involved in regulating healthy circadian rhythm (the body's 24-hour clock) and supporting restful sleep. We've already talked about how important sleep is for the brain, so this could be a good option to consider if the basic lifestyle approaches aren't doing the trick.

Phosphatidylserine is an essential nutrient for brain health and helps to reduce the adverse effects of elevated cortisol, the "fight-or-flight" stress hormone. It also contributes to proper neuron-membrane structure, which facilitates effective cell signaling and response to neurotransmitters and hormones.

The mineral magnesium, one of the body's most important minerals, is a natural muscle relaxer, which may benefit individuals who face periods of being physically tense from time to time. It can be consumed as a capsule, a pill, a powder, or a liquid. Some herbal supplements can also be useful; for example, chamomile has been shown to promote calmness without impairing memory or causing drowsiness. It can be very easily consumed as a tea in the evening.

Conclusion

Stress is a part of life, which means we must deal with it somehow! We've evolved to work in certain ways and that's helped us survive, but it hasn't helped us thrive with our existing lifestyles. We need to work hard—sometimes very hard—to optimize health. This may involve going against the grain. This may involve self-discipline. But it's worth it. We talked about how the primitive brain can hijack us when it's not appropriate. We can't stop it, but we can minimize the damage. The lifestyle basics included eating well, exercising, sleeping well, and being mindful. We then discussed numerous supplemental options that may be suitable add-ons. As always, I encourage you to consult with your health-care provider or naturopathic doctor before starting anything new, so that you know it is safe and appropriate for you.

Dr. Chris Habib, ND
Clinic supervisor at the largest naturopathic college, Chris is an evidence-based naturopathic doctor with over a decade of education in health-care. He is also involved in teaching, research, and publishing.
chrishabib.com

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MCTs | Hope for Dementia Research

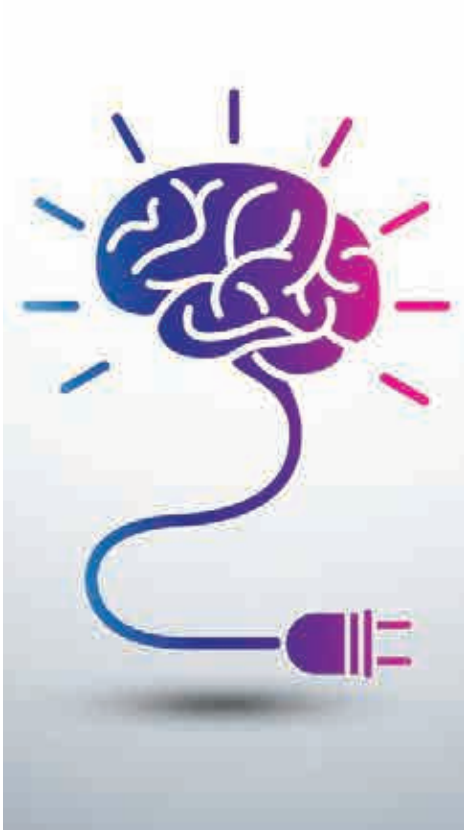
by Gordon Raza, BSc

A recent study published in the May 2019 issue of *Alzheimer's and Dementia*, the journal of the Alzheimer's Association, has the scientific community excited about the potential role of medium-chain triglycerides (MCTs) for healthy aging.

Let's begin with defining dementia, clinically referred to as major cognitive disorder, which is a syndrome and not a disease. This translates to being a condition with multiple symptoms which may include short-term memory failure, inability to multitask, impaired language comprehension or expression, difficulty with spatial relationships, and diminished capacity to interpret nonverbal cues.

The road that leads to dementia takes routes as varied as Alzheimer's disease, HIV infection, stroke, acute oxygen deprivation, or simply a consequence of the aging brain. There is, however, emerging research which suggests an "energy crisis" within the brain could also contribute to dementia.

The average adult brain makes up about 2% of an adult's body weight, yet accounts for 20% of total energy consumption. Some of this energy goes into maintenance and repair; however, approximately 75% of available energy is spent on cell signalling, which occurs in gaps between cells called synapses. The brain is a dynamic organ requiring a constant energy supply; it does not store energy like muscles.



Current research, led by Dr. Stephen Cunane of the University of Sherbrooke in Quebec, has led to believe the aging brain may struggle to get enough energy from its principal energy source: glucose. The inability of brain cells to metabolize glucose contributes to symptoms present in both Alzheimer's and dementia. Their research involved supplementation with medium-chain triglycerides (MCTs) from coconut and palm-kernel oils. The two principal energy sources in MCTs, caprylic (C8) and capric (C10) fatty acids, are converted by the body into ketones, which the brain exploits as an alternative fuel for thought and cognitive performance. Dr. Cunane compares the brain to a hybrid car, which can run on different sources of fuel. The beauty of supplementing with MCTs is that they don't compete with glucose to fuel the brain; they follow a different metabolic pathway.

Their research involved 52 seniors with mild cognitive impairment for a duration of six months. They were all tested for memory, word recognition, and processing speed. Half the participants received a daily dose of 30 g of MCTs, while the other half received a placebo. Six months later, results for these tests showed the MCT group performing better on all fronts.

In the MCT group, brain cells believed to be dead were now lighting up on brain scans. This suggests regions of the brain not able to metabolize glucose were energized with ketones produced from supplementation with MCTs. In fact, ketone metabolism increased by 230% in the brains of participants taking MCTs. Evidence from this pilot project is exciting, spurring larger-scale research that will hopefully explore the metabolic dynamics of the brain and the therapeutic potential of MCTs for their role in healthy aging.

The great news for consumers is that MCTs are not a drug awaiting regulatory approval: They're readily available in liquid, capsule, or powdered form at your local health-food stores.

Acetyl-L-Carnitine

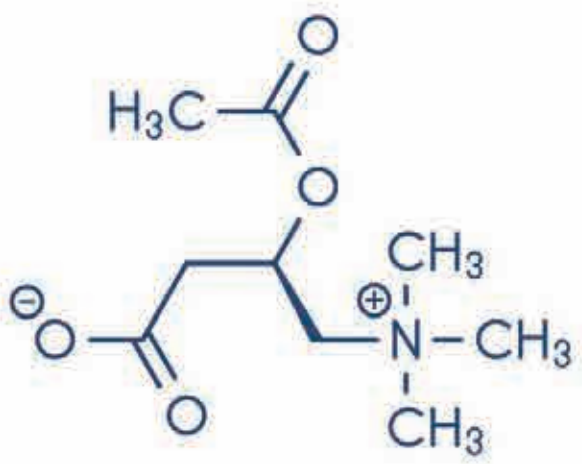
Mitochondrial Muscle Power

by Dr. Philip Rouchotas MSc, ND and Dr. Heidi Fritz, MA, ND

L-Carnitine is an amino acid–based nutrient well known for its effects in supporting mitochondrial function, specifically metabolism of long-chain fatty acids. L-Carnitine transports long-chain fatty acids into the mitochondria for breakdown via *beta*-oxidation, in order to produce adenosine triphosphate (ATP), the energy molecule of the cell. *beta*-Oxidation is the most efficient way for the body to produce ATP and is an important source of energy production for tissues, including skeletal muscles as well as the muscles that comprise the heart and blood vessels.

Nutritional Background

Although carnitine can be obtained in the diet (meat and dairy are the best sources) and some can be synthesized in the kidney, liver, and brain, carnitine is nonetheless considered a "conditionally essential" nutrient for humans under specific circumstances when intracellular levels are low. These instances can be found in premature infants, the elderly, patients with diabetes, and specific genetic conditions resulting in primary or secondary carnitine deficiency. In addition, supplementation with L-carnitine has been shown to be beneficial in a number of disease conditions including heart disease, peripheral vascular disease, neurological diseases, as well as male and female infertility of various kinds.



acetyl-L-carnitine

Acetylated carnitine, called acetyl-L-carnitine or ALC, is a form of L-carnitine that is more able to cross the blood-brain barrier, and as such is especially helpful in neurological conditions. In the adult brain, the two carbons from the acetyl group can also be used to synthesize fatty acids, which are preferentially incorporated into the structural lipids of the cell, rather than broken down for energy via *beta*-oxidation. In this way, ALC in the brain provides the carnitine that is needed to transport long-chain fatty acids into the mitochondria to create ATP (energy), but it also provides the acetyl group that is used to build structural fats for the cell. The acetyl-CoA group derived from ALC metabolism is also thought to be a precursor for acetylcholine, an important neurotransmitter or signaling molecule, in the brain. Acetylcholine is involved in attention, learning, and memory, and impaired acetylcholine function has been implicated in neurodegenerative conditions such as Alzheimer's disease. Studies have shown that ALC may increase brain levels of acetylcholine.

Evidence in Disease: Cardiovascular Disease

Many clinical trials have reported improvements in heart function associated with supplementation of L-carnitine. Recently, a randomized clinical trial evaluated the effect of L-carnitine on children with dilated cardiomyopathy, a condition leading to heart failure because the heart muscle cannot pump effectively. All children were treated with standard heart medications, with half the group also receiving oral L-carnitine dosed at 50–100 mg/kg/d. After one year, the group receiving L-carnitine had significantly greater improvements in heart function, including a measure called ejection fraction, compared to the group receiving standard care alone.

Another study in patients undergoing coronary bypass found that supplementation with L-carnitine had no effect on cardiac remodeling, but was associated with a 37% increase in left ventricle ejection fraction, a measure of the heart's pumping ability, as well as a 14% reduction in systolic diameters, compared to the placebo group.

Neurological Disease

A 2015 systematic review evaluated the effect of ALC supplementation on peripheral neuropathy, a condition that results in chronic tingling or painful burning sensations in the extremities. Peripheral neuropathy is typically associated with long-standing diabetes as well as being a side effect of chemotherapy drugs and antiretroviral medications (used to treat HIV). The review included four randomized controlled trials including 523 patients who had various kinds of peripheral neuropathies. Results showed that patients who received ALC had significantly reduced pain as assessed by a visual analog scale, compared to placebo. The effect seemed to be more beneficial in diabetic patients than in nondiabetic type of neuropathies.

ALC shows promise for a number of neurodegenerative conditions. In a randomized trial, supplementation with 3 g/d ALC or placebo, alongside pharmacological therapy with riluzole, was shown to reduce the loss of function due to ALS and to reduce loss of lung function in 42 patients at 48 weeks, compared to placebo. This study also demonstrated markedly improved survival rates associated with ALC supplementation, from 22 months with placebo to 45 months with ALC.

Another set of studies evaluated the effect of a nutraceutical formulation containing folate, vitamin B_6, vitamin E, *S*-adenosyl methionine, *N*-acetylcysteine, and acetyl-L-carnitine in patients with early as well as moderate- to late-stage Alzheimer's disease. Both studies showed improvements in cognitive

function as assessed by the Neuropsychiatric Inventory (NPI). In early-stage patients, this improvement was similar to that expected from the pharmaceuticals donezepil and galantamine at three to six months. In the moderate- to late-stage patients, "institutional caregivers reported approximately 30% improvement in the Neuropyschiatric Inventory and maintenance of performance in the Alzheimer's Disease Cooperative Study-Activities of Daily Living for more than 9 months." Another study of ALC in combination with pharmaceutical therapies showed increased response rates in patients with Alzheimer's disease.

In patients with multiple sclerosis (MS), a prospective study found that supplementation with 3 g/d ALC resulted in decreased reports of fatigue intensity in 63% of patients, especially among those being treated with immunosuppressant or immunotherapy drugs cyclophosphamide and interferon-β. Another study showed that ALC was superior to the drug amantadine for treating MS-related fatigue.

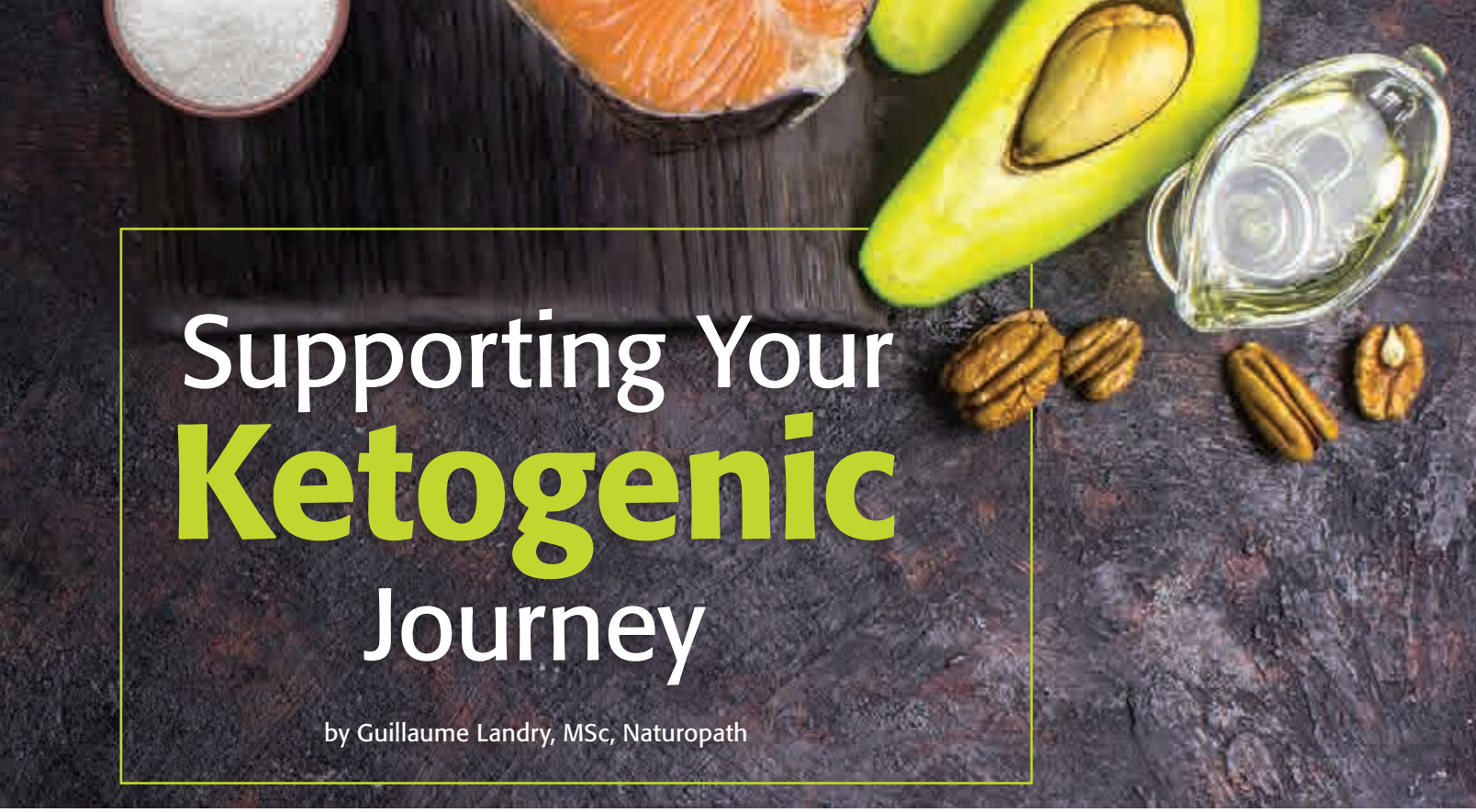
Fertility

Finally, L-carnitine has been extensively studied with respect to fertility, particularly male fertility. L-Carnitine has been shown to improve sperm counts and sperm motility in several studies, as well as to improve live birth rates. In women, supplementation with L-carntitine for approximately three months before undergoing in vitro fertilization (IVF) significantly increased day-3 and day-5 embryo quality, compared to previous IVF cycles for the same women. This is likely due to enhanced mitochondrial function / energy production and antioxidant effects in the egg cell or oocytes.

Conclusion

In conclusion, L-carnitine is an important nutritional cofactor for mitochondrial function or cellular energy production, with implications for many body systems including muscles, heart, brain, and the reproductive system. In particular, acetyl-L-carnitine is a carnitine with specificity for the nervous system and has been studied in patients with Alzheimer's, MS, and ALS, alongside standard pharmacological therapy.

Visit our blog for the full article including references:
newrootsherbal.com/en/blog



Supporting Your Ketogenic Journey

by Guillaume Landry, MSc, Naturopath

Keto in Brief

The ketogenic diet consists of drastically reducing the proportion of carbohydrates in your diet, in favour of healthy fats (lipids), which should comprise 70% of your caloric intake. The body is forced into a state of ketosis, where it utilizes fats as its primary source of energy; i.e. the burning of stored fat. Once carbohydrates and glycogen (a form of energy storage in the liver) are depleted, metabolism occurs mainly through ketones produced by the liver with lipids.

These ketones play an important role in gene expression, in nervous and immune systems, in reducing inflammation, and as antioxidants. For close to a century, the ketogenic diet has been used to treat epilepsy. Today, it is also among the recommendations for concussions and various inflammatory conditions. Its popularity is due to the fact that it clearly contributes to weight loss in people who follow it properly (although its long-term effectiveness remains to be evaluated).

May be beneficial for:

- Weight management and body composition
- Cardiovascular diseases
- Metabolic disorders (diabetes, cholesterol, blood pressure)
- Neurodegenerative disease (dementia, Alzheimer's, etc.)
- Concussion recovery
- Seizure disorders

Precautions and Contraindications

The ketogenic diet is not recommended for individuals with a history of hepatitis, difficulty digesting fat, or gallbladder disorders or removal. This precaution also applies to women who are pregnant or breast-feeding. In such cases, or if you have other concerns, be sure to consult a health-care practitioner before implementing changes to your diet or overall lifestyle.

A keto diet is more than just healthy fats. It's important to consider nutritional fundamentals that can help you optimize your efforts and reduce associated risks. Let's make your journey pleasant and successful!

Digestive Support

Any radical change in diet affects the intestinal flora and can cause symptoms such as constipation, which is sometimes an issue during a

ketogenic diet. To avoid this, stay well-hydrated and choose foods rich in fibre. Probiotics will help replenish intestinal flora, and magnesium will assist in maintaining proper electrolyte balance. Digesting a larger-than-usual amount of fat may require additional enzymatic capacity as well as the need to optimize production and circulation of bile. An enzyme formula, either rich in lipase and/or reinforced with ox bile, will help with this digestive challenge. This can also be accomplished with plant-sourced "bitters" that increase the production and circulation of bile.

Metabolic Support

The new metabolic paradigm into which the ketogenic diet plunges the body may require added support to optimize the new biochemical mechanics that are set in motion. The liver is central to fat metabolism, and B-complex vitamins are essential to these metabolic pathways. At the cellular level, acetyl-L-carnitine is crucial, because its derivatives guarantee the transport of fatty acids into the mitochondria, where they are used for energy production. *Garcinia cambogia*, standardized to 60% hydroxycitric acid, helps you feel satisfied longer following a meal. It may just be the extra help needed to avoid those sugary desserts!

Bring on the Good Fats

A successful ketogenic diet involves consuming sufficient quantities of good fats and healthy proteins. Oily fish, avocados, and nuts are a good source—and they taste great! However, ensuring daily intake of these healthy fats can be challenging. Supplements help solve this challenge and have multiple health benefits.

Medium-chain triglycerides (MCTs), from coconut or palm, travel from the intestines directly to the liver via the portal vein, providing the body with ketones, a simple yet extremely effective source of energy production. Add it to your morning coffee for an energizing start to your day.

Omega-3s, with an ideal EPA-to-DHA ratio of 2:1, help support cognitive health and reduce cholesterol, among other benefits. Phytosterol-reinforced oils strengthen cardiovascular status with their beneficial effects on cholesterol.

Choosing Your Proteins

Nearly every function or structure of the body requires amino acids as basic building blocks. These are fundamental nutrients of the ketogenic diet and should be supplemented with if you feel you may lack adequate protein in your new diet. Lupine seed is a good source of iron and is one of the natural options for improving metabolic disorders. Pumpkin seeds are rich in amino acids, the most abundant of which is L-tryptophan. L-Tryptophan is a precursor to serotonin, an important neurotransmitter involved in the regulation of mood, sleep, motivation, appetite, and more. Beef bone broth powder is an excellent source of animal protein. The bioavailability of its proteins is optimal, and its collagen content has many additional benefits (joints, skin, hair, nails). If protein powders are not your thing, amino acids can also be found in convenient tablet form. The choice is yours!

Covering Your Bases

The use of glycogen (the body's sugar reserves) at the beginning of the ketogenic diet is accompanied by a loss of water (3–4 g per gram of glycogen). It is therefore essential to ensure adequate hydration and electrolyte balance. To do this, choose a full-spectrum, buffered electrolyte as this is an easily absorbed form of electrolytes and minerals. Supplementing with a diverse flavonoid formula is also advised for antioxidant action during transition.

With any considerable reduction in food diversity comes a risk of deficiencies of antioxidants, vitamins, and minerals. Choose a comprehensive multivitamin, berry-extract antioxidants, or green superfood blends in powder form. Vitamin D is critical to good health. Select foods associated with the keto diet will naturally increase one's vitamin D intake. But even so, most Canadians are not likely to absorb sufficient amounts of the "sunshine vitamin," due to our northern climate. Adding a vitamin D_3 supplement will ensure you get the recommended daily dose.

Sweeten without Calories, and Brighten up Your Recipes

For many, giving up the pleasant sensations of sugar remains a considerable obstacle. But every problem has a solution: Stevia, a great alternative sweetener, will satisfy your sweet tooth without disrupting your metabolism.

We encourage you to brighten up your keto recipes with fermented functional foods. Fermentation increases nutritional value tenfold and is fully compatible with the ketogenic diet. Choose from ginger, turmeric, beet root, and maca, according to taste and preference.

More and more people worldwide are adopting the ketogenic lifestyle, and although it's gaining popularity, it does go against many firmly held nutritional beliefs. It should not be embarked upon without a solid understanding of one's own health and potential implications involved. This brief overview is meant to assist you in identifying which natural health products are appropriate when choosing a ketogenic lifestyle, to ensure a healthy and successful experience.

Managing Social Etiquette

Following a ketogenic lifestyle requires a strong commitment and willpower, in part to resist social and cultural pressures. Will you be able to say no to the muffin offered by your coworker, knowing that it would break ketosis? Or refusing homemade pasta when dining at your Italian neighbour's home? Feelings can easily be hurt. Dining at restaurants or a friend's home can derail your diet if one is not vigilant. Living a ketogenic lifestyle takes time and planning, and it often involves additional meal preparation. It also requires the support of family, friends, and entourage. Their willingness to accept your new choice may require a humble explanation of the motivations and objectives behind your decision. Honesty and openness will serve as your pledge to success. Once free of hurdles and frustrations, you can enjoy your social life and the benefits of your new lifestyle.

This article is intended solely for general information and should not be relied upon for diagnosis, treatment, or cure. It is therefore strongly recommended that individuals consult with their health-care practitioner prior to beginning lifestyle or diet changes.

Keto support guide available for download at newrootsherbal.com/keto

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She Gave Up on Dieting and Regained Control of Her Health

Flourish Interview

After close to 30 years of struggling with diabetes, late last year "Julie" reached a breaking point. She had tried every diet under the sun, personal trainers, and expensive "diet foods," but she could never stick with anything. Her health was deteriorating, and she needed to do something. A self-confessed "sugar addict with zero willpower," she was on sick leave from work and needed to get a handle on her diabetes. Then she discovered the keto lifestyle—and regained control of her life!

Like many of us, Julie led a busy but sedentary lifestyle; working late, too many restaurant meals, not enough exercise. She was also living with diabetes, which developed following a pregnancy. She had simply closed her eyes to it, and over the years, it progressively got out of control. Her body was sending distress signals: extreme pain, spontaneous vomiting, etc. Following repeated trips to the hospital, she was put on sick leave. She needed to do something and had heard that it may be possible to reverse this condition. She attended a presentation on something called the keto diet, and although she left very confused, something stuck. So, with considerable time on her hands, she went on the hunt for more information.

Julie discovered what she refers to as "a book everyone should read": *The Obesity Code*, by Dr. Jason Fung. Easy to read and understand, it explores why we have so much trouble losing weight. It elaborates on hormones, appetite, metabolism, insulin resistance, and fat storage. Finally, something that identifies the root cause of weight gain.

This was an "ah-ha" moment for her. Before even finishing the book, she was certain this was the key, but it seemed so radical… So, she continued her search, reading more, listening to presentations by different experts. She needed to better understand her condition, and what her body was potentially capable of. She also needed a comprehensive grasp on food composition and supplements; especially since she did not eat meat or fish. The most important factor was figuring out how much sugar is hidden in healthy foods we'd never suspect, like milk, tomato sauce, and yogurt. Once she felt comfortable that she had facts, she consulted with her doctor, advising him that she planned to adopt a ketogenic lifestyle. His approval (albeit with warnings) was the starting point for what she hoped would be her path to freedom.

The ketogenic diet consists of getting a substantial amount of calories from healthy fats, a moderate amount from proteins, and minimal amounts from carbohydrates.

Julie was armed with knowledge and motivation—now, she just needed support. She knew her lack of willpower would let her down if she did not have some extra help. Her husband quickly agreed to join her "If it's good for you, it can't possibly be bad for me!" He too had some health concerns (high cholesterol), but nothing that prevented him from joining her.

She may lack willpower, but she has lots of fortitude. Julie totally purged her fridge, freezer, and pantry of anything processed and not keto-friendly. Sugar, cookies, pasta, cereals, wheat flour—all of it was all donated. And she restocked her kitchen with everything they would need to start off properly: almond flour, coconut milk, 35% cream, MCT oil, etc. It was a considerable investment, but it was well worth it for her, and on December 1, 2018, they started a new way of life.

Julie recognizes not everyone can spend $500 to replace all their food supplies. But it is possible to take gradual steps to eliminate excessive sugars. Rather than buying commercial granola bars, buy some almond flour, nuts and grains and make some healthier ones. Switch to plain yogurt and add a few raspberries to sweeten it a little. Small steps towards reducing excessive sugars.

She admits it was hard at the beginning. Reading labels in grocery stores, referring to her notes—it was tiring and took extra time. There are apps available to help with this, but none were available in French at the time, so she had to manage on her own. She quickly learned what foods to choose, as well as what to avoid, and shopped accordingly. Planning and preparing all their meals and lunches was also new to her. Luckily, the internet is packed with versatile keto recipes that taste amazing and don't take long to prepare. And once her husband got past his "withdrawal" from his favourite white bread, things got easier. Now she prepares full feasts for friends and family who can't believe her lasagna, pizza, and chocolate cheesecake are so low in carbs and sugars.

When going out to eat, they are more selective in where they go and how they order. They replace fries with vegetables, melting extra butter over them, and ask for cream instead of milk for coffee. Many restaurants are very willing to make healthier substitutions. Some burger places now offer "salad wrap" instead of a bun. Grabbing a quick meal on the run is considerably more difficult. You need to invest in preparing storable snacks that you can take with you. They were worried that their vacation that an all-inclusive Caribbean resort would throw them off, but it didn't. With the variety offered, they always find great food to eat.

And there are temptations all over; red licorice was once Julie's favourite. Her sweet tooth now is satisfied using erythritol and monk fruit sweeteners (stevia is another option) to create new favourites. She makes her own candy, chocolate bars, puddings, and cakes. Her colleagues are constantly in awe of the lunches and deserts she brings to work—but again, these need to be prepared ahead of time.

By the end of February, Julie was off her medications. Her doctor confirmed that her blood sugars were normal. She did not have spikes or dips, and she felt incredible. Her husband's cholesterol was confirmed by his doctor, returning to normal.

At the time she went on sick leave, Julie was taking 74 units of insulin daily, plus her other prescriptions. After three months, she was off her injections and all her medications.

After approximately seven months, she had gone from weighing 172 lb down to 120 lb, and from wearing a size 12 down to a size 6. Her husband's transformation was just as impressive: from 245 lb down to 195 lb, and he transitioned from a pant waist size of 40 down to a 34!

Julie is now back at work and feeling like a new person. Friends and colleagues are visibly impressed with the change in her appearance. When they ask how she did it, she tells them: "We changed the food we eat." She does not use the word "diet," because she never felt like she was on one. She was always satisfied, never hungry: "We eat like kings!" If someone is truly interested, she explains that she adopted a ketogenic lifestyle and offers her time to take them though the concept. Many are skeptical, even after they see the results. But this does not bother her; she has a great new life and is loving every minute of it.

So, what advice would she give?

"**Firstly, get informed on the topic—really informed.**" She is not referring to a short social-media post nor to spending hundreds of dollars to have someone coach you. "Read books! Find credible podcasts and videos. Invest the time into educating yourself so you can make an informed decision." She recommends everyone read *The Obesity Code*, and take the time to know the food you buy. Learn to read labels and ingredient lists, so you are not taken in by misleading claims. Anything ending in "-ose" and even some things ending in "-ols" are sugars! Avoid products labeled "reduced-, low-, or 0% fat"; when manufacturers remove fat, they replace it by sugar fillers to maintain the taste! Julie is adamant: "Sugar is the worst drug on this planet—worse than cocaine! We are addicts and we don't even realize it. I challenge everyone to check their fridge and pantry and look for the sugars—obvious and hidden. It will shock you!"

Plan to prepare and prepare to plan—always! Time is part of the investment you must make when choosing to go keto! Finding and testing alternative recipes, finding stores where supplies are more affordable, shopping for low-carb options, prepping, and cooking—they all need to get done. Eating on the run rarely works. Just look around: donuts, pastries, breakfast sandwiches, burgers, French fries… the majority of "grab-and-go" foods are high in carbs. Who was it that said: "If you fail to plan, you are actually planning to fail"?

"**Take supplements seriously.**" When you move to ketogenic eating, your body will be affected, even though you won't feel it right away. You must support your diet with supplements to fill in missing gaps and help your body adjust; vitamin B_{12}, vitamin D, omega-3s, MCT oils, and especially electrolytes (including magnesium). Do the research to understand what you will need. "Buying good-quality supplements may seem expensive, but they are worth it. I learned the hard way!" Neglecting her electrolytes, she was nearly hospitalized. She was dehydrated and missing salts and minerals.

She suggests buying more expensive items—such as nuts, almond flour, butter, and 35% cream—when they are on sale and freezing them. Health food stores have flyers too! You can buy your MCT oils and other supplements when they are on sale; just be sure to check the expiry dates!

She insists if someone is going to consider this, they do so for the right reason. Her motivation was improving her health and reversing her diabetes, which to her was the equivalent of a life sentence. Whatever your reason, she suggests doing so wholeheartedly and with a passion for exploring new options. It's all about the choices you make. She made a major lifestyle choice, and she is convinced she made the right one!

"Julie" works as a nurse near Montreal, Quebec. As such, she is unable to give medical or dietary advice. She felt a strong need to share her story in hopes of helping others in similar situations become more aware, so we used an alias, allowing her to do so while remaining anonymous. The views and opinions expressed are hers alone and should not be taken in lieu of medical advice.

Words of Gratitude from

DAVID SUZUKI FOUNDATION
One nature.

New Roots Herbal is privileged to work with many charitable organizations by means of its *Choose to Care* program. We recently received a thank-you note from the David Suzuki Foundation, accompanied by their annual impact report—but we thought it was more important to thank them. Their work, inspired by the leadership of internationally renowned geneticist and environmental activist David Suzuki, lends hope for a better world.

Their efforts include getting bee-killing insecticides banned, saving orca whales, and acting against climate change. They truly make life better!

Choose to Care continues to grow and donated in excess of $124,000 to designated charities in 2018. The process couldn't be easier: When consumers purchase any New Roots Herbal product, part of the purchase supports *Choose to Care*. It's that easy.

Thank you!

Other Supported Organizations

Habitat for Humanity Canada / Habitat pour l'humanité Canada
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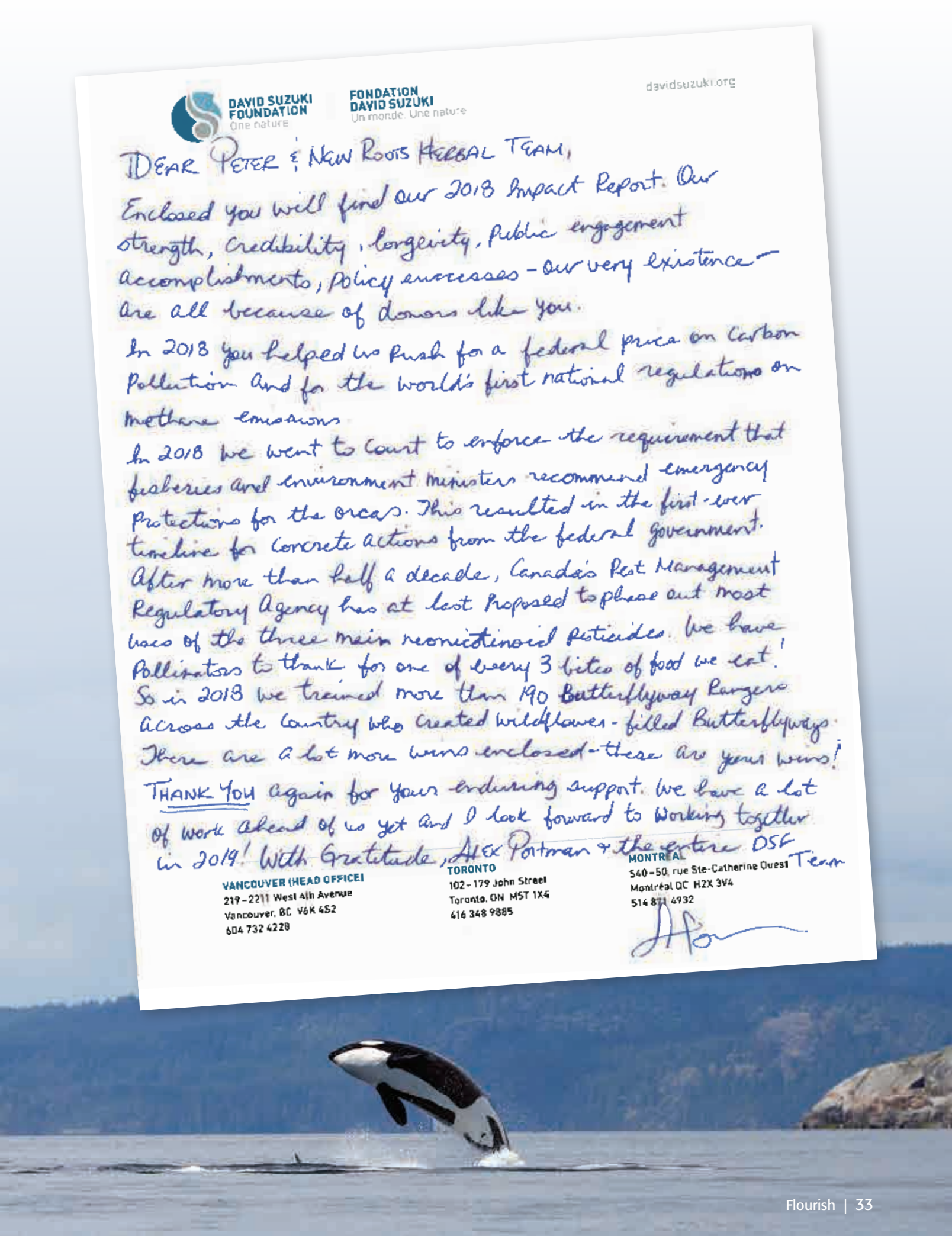

DAVID SUZUKI FOUNDATION
One nature

FONDATION DAVID SUZUKI
Un monde. Une nature

davidsuzuki.org

Dear Peter & New Roots Herbal Team,

Enclosed you will find our 2018 Impact Report. Our strength, credibility, longevity, public engagement accomplishments, policy successes - our very existence - are all because of donors like you.

In 2018 you helped us push for a federal price on carbon pollution and for the world's first national regulations on methane emissions.

In 2018 we went to court to enforce the requirement that fisheries and environment ministers recommend emergency protections for the orcas. This resulted in the first-ever timeline for concrete actions from the federal government.

After more than half a decade, Canada's Pest Management Regulatory Agency has at last proposed to phase out most uses of the three main neonicotinoid pesticides. We have Pollinators to thank for one of every 3 bites of food we eat! So in 2018 we trained more than 190 Butterflyway Rangers across the country who created wildflower-filled Butterflyways.

There are a lot more wins enclosed - these are your wins!

THANK YOU again for your enduring support. We have a lot of work ahead of us yet and I look forward to working together in 2019! With Gratitude, Alex Portman + the entire DSF Team

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Zucchini Pizza Boats

Zucchini boats are a delicious and fun way to get some extra veggies in. They are so versatile and act like a minipizza; top them with your favourites and enjoy! They also make for a very-low-carb side dish option for anyone watching their carbohydrate intake or following a keto diet!

Ingredients

- **4 small to medium zucchini**
- **½ cup tomato sauce or pizza sauce**
- **½ cup shredded mozzarella**
- **2 tbsp. dried oregano**
- **Salt and black pepper to taste**

Instructions

Wash and cut the ends of the zucchini off. Place in a pot and fill with water. Bring to a boil and gently boil zucchini until they soften (5–7 minutes). Remove from pot.

Slice the zucchini in half lengthwise. Remove seeds, so you have room for stuffing.

Preheat oven to 375 °F (190 °C).

Stuff zucchini boats with tomato sauce. Sprinkle with shredded mozzarella, dried oregano, salt, and black pepper to taste.

Place in oven-safe dish and bake for about 10 minutes or until cheese is melted. Enjoy!

Serves 4–6.

For One Full Stuffed Zucchini

- **154 kcal**
- **10 g total fat**
- **9 g carbohydrates**
- 9 g protein

Angela Wallace, MSc, RD

A registered dietitian with the College of Dietitians of Ontario, personal trainer, and family-food expert who specializes in women and child nutrition and fitness, she loves helping families get healthy together.

eatrightfeelright.ca

Keto Matcha Almond Squares

Vegan- and Paleo-Friendly

Ingredients

- ½ cup coconut butter, melted
- ½ cup raw almonds, roughly chopped
- 2 tbsp. cacao butter, melted
- 2 tbsp. coconut oil, melted
- 1 tbsp. ground xylitol (or 2–4 drops stevia)
- 1 tsp. matcha powder

Instructions

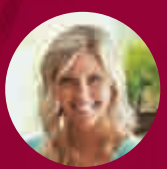
Whisk the coconut, cacao butter, oil, and xylitol together until smooth in a warm bowl (keep it warm so it stays fluid).

Pour ⅓ cup of the mixture into a parchment or plastic wrap–lined container (not too big). Set in the fridge for 20 minutes until it starts to firm up.

Whisk the matcha powder and almonds into the remaining mixture. Spread over the white layer, and place in the fridge for 25 minutes until firm.

Cut into pieces. It won't cut perfectly.

Keeps in the fridge for up to 3 weeks.



Heather Pace

A classically trained chef turned raw-dessert chef, she is a travel bug, a chocoholic, and a certified yoga instructor.

sweetlyraw.com

Chia Chips

Grain-, Gluten-, Dairy-, and Gum-Free, Vegan-, Paleo-, and Keto-Friendly

Up your omega-3 ante with these delicious and ultralight chia chips. Full of healthy goodness, the crispy texture of these chips reminds me of Indian papadums, often enjoyed with chutneys or other dips. These are a great snack on their own and are also wonderful with dips or with some salad spooned on top. They are so delectable, it's hard to believe how good they are for your body!

Dry Ingredients

- 1 cup chia seeds
- 2 tbsp. nutritional yeast
- 1 tbsp. golden flax seeds (optional)
- ¼ tsp. Italian seasoning
- ¼ tsp. Himalayan salt, or to taste
- ¼ tsp. onion powder

Wet Ingredients

- 1½ cups water
- 1½ cups chopped kale (with stems), firmly packed
- ½ cup chopped basil (with stems), firmly packed
- 3 Roma tomatoes, roughly chopped
- 1 tbsp. lemon juice
- 1½ tsp. balsamic vinegar

Instructions

Place all of the dry ingredients into a very large bowl, stir to combine, and set aside. Place all wet ingredients in a high-speed blender and process until smooth. Pour into the bowl with the dry ingredients and stir quickly until completely combined.

With an offset or other spatula, spread as thinly as possible (tiny holes are not a problem) onto Teflex dehydrator sheets. Score into desired shapes and then dehydrate at 105 °F (40 °C) for 12 hours. Carefully flip the crackers over onto the mesh dehydrator sheet, removing the Teflex sheet.

Dehydrate for another 12 hours, until crispy. Because these chips curl quite a bit during the dehydration process, it is best to leave extra space above each tray, if possible. After they are fully dehydrated, break the chips into pieces.

Theresa Nicassio, PhD, Psychologist

Theresa is a wellness educator, radio host, and the award-winning author of *YUM: Plant-Based Recipes for a Gluten-Free Diet.*

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New Roots HERBAL

Habitat for Humanity®
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Building Dreams

Habitat for Humanity is helping break the cycle of poverty with a unique and sustainable business model. Founded in 1976, it's an international nonprofit organization dedicated to building and financing affordable housing for low-income families. Deserving families invest a minimum of 500 hours work into building their home, along with a volunteer workforce. Habitat for Humanity further invests into the family's future with a lifetime of spiritual support and encouragement.

Pictured on the right, New Roots Herbal's build team with future homeowner Edna, her daughter playing in her future backyard.

I see discount brands of supplements being sold in an increasing variety of retail locations at prices too good to be true. Are they any good?

You can definitely find the occasional diamond in the rough; however, in general, you get what you pay for. Spin the bottle to examine the label; it should indicate whether you're getting a powdered form of an herb, a potency-validated extract, or a detailed ingredient deck. If it's a brand you're not familiar with, you may want to reach out to them to see if they test their products for purity, and in some cases even identity, in an ISO-accredited lab. Ultimately, a trusted health-food retailer with knowledgeable staff and products they have vetted for value and quality is your best bet. They can guide you into choosing the right product for your therapeutic needs. To summarize, its about your health, and you want to know that what you're putting into your body is making your life better—not a waste of your time and resources.

I have a family history of heart disease. Upon analysis of my blood-lipid profile, my family doctor prescribed prescription statin drugs to lower my LDL (harmful) cholesterol. Apart from shedding a few pounds and being more active, do you have any natural strategies to further improve my cardiovascular status?

Statins work by reducing LDL production by the liver, and helping the body reabsorb cholesterol within the bloodstream. Plant sterols could help, as they work differently, blocking intestinal absorption of harmful cholesterol. Adding plant sterols to your diet—either through supplements or naturally-occurring sources such as wheat bran, peanuts, almonds, or Brussels sprouts—could prove beneficial. The Mayo Clinic reports a meta-analysis of 41 trials showing that 2 g of plant sterols per day can reduce LDL cholesterol by 10%. These benefits can be reached in addition to changes in diet or drug intervention. Research demonstrated adjunctive use of plant sterols with statin medication could prove even more effective than doubling statin dosage.

Ask your health-care practitioner their opinion on plant sterols and how they could be incorporated to improve your situation.

You have a question you would like answered about your health and supplements? Gord would be happy to answer them! We could even feature them in this page if others could benefit from the information. Reach out to him at facebook.com/newrootsherbal or call 1 800 268-9486 ext. 237

Flourish

Blog Preview

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For more articles on health, lifestyle, and wellness—add to that delicious recipes!—all in a more dynamic and accessible format, visit our blog in the upcoming weeks at flourishbodyandmind.com

Against the Grain

Chia seeds, once the driving force behind the iconic Chia Pets of the 1970s, have emerged as a supernutrient this millennium. They're an unprocessed, whole-grain food full of protein, healthy fats, fibre, and energy. We'll share a few ways to incorporate them into your healthy, active lifestyle.

I Scream, You Scream...

Yes, it's for ice cream! Visit our blog for a sumptuous keto ice cream recipe. It's a quick-and-easy desert that can be an exclamation point for a great dinner! You'll need to pick up a couple of ingredients at your local health-food store; the others are likely in your pantry. It takes less than an hour excluding cooking and chilling.

Small Intestinal Bacterial Overgrowth: Causes, Testing, Stages of Treatment Overview

Small intestinal bacterial overgrowth (SIBO) is a term used to describe the result of movement of bacteria from the large intestine into the small intestine. SIBO is defined as a bacterial population in the small intestine exceeding 105–106 organisms per millilitre; [. . .]

How Are We Doing?

We appreciate you taking us home for a read. Let us know how you like our content and perhaps even some topics you'd like us to delve into with upcoming issues. From now until December 1, everyone providing feedback will qualify for a chance to win an aromatic diffuser gift set. Go to **flourishbodyandmind.com/feedback** and fill in the survey to be entered.

If online surveys are not your thing, give us a quick call at 1 800 268-9486 ext. 237. We'll get your thoughts and enter you to win.

Good luck!

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