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A Healthy Diet is So Much More Than Just the Food You Eat

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Editor's Letter

Let's start with a hardy thank you for picking us up! We trust this edition of *Flourish* will help make winter fade in the rear-view mirror as we gear up for the healthy and adventure-filled months that lie ahead.

Nobel prize–winning poet T.S. Eliot sums up the bittersweet transition from winter to spring with the introductory lines of his poem *The Wasteland*:

April is the cruellest month, breeding
Lilacs out of the dead land, mixing
Memory and desire, stirring
Dull roots with spring rain.
Winter kept us warm, covering
Earth in forgetful snow...

Our spring theme supports healthy, active living to help make the most of these precious months. We share articles with a focus on generating energy at the cellular level, with discussions of supplementation with L-carnitine and D-ribose, to the many ways medium-chain triglycerides (MCTs) can enhance your nutritional profile.

We also feature a review of Canada's controversial Food Guide, with its shift from traditional food groups to more plant-sourced proteins, which serves as welcome news for many of us.

Culinary Corner features original recipes such as a guilt-free and dairy-free cheesecake, a vegan pimento dip, and a delicious protein-packed berry-and-lentil smoothie.

Yours in health!

Peter F. Wilkes
Editor-in-Chief

Flourish

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Lions' Mane Mushroom: A Champion of Memory

Lion's Mane (*Hericium erinaceus*) has many properties—such as immunomodulator and antiulcer—and among them, the capacity to stimulate neuronal growth factor (NGF) synthesis thanks to its phenolic derivatives, erinacin and hericenone. NGF helps regenerate neurons, especially those of the hippocampus, foundation of memory in the brain. It especially helps in reconstructing the myelin sheath that envelops neurons and ensures their good function; it also reduces the inhibitory and proinflammatory amyloid plaques involved in type 3 diabetes, a comorbidity of Alzheimer's disease. A natural support for nervous and retinal cells, lion's mane has shown a promising potential on prevention and follow-up of Alzheimer's disease, dementia, and blindness, but also in the recovery of concussions or any nervous system ailment. Hockey and football champs should learn from this!

MCTs

For Calories that Count; Not Just for Counting Calories!

by Gordon Raza, BSc

Imagine yourself as part of a large group waiting for a table at a busy restaurant; while you patiently wait, single diners and couples seem to get seated with VIP status. Similarly, carbohydrates, fats, and proteins have their own unique and complex requirements for digestion, assimilation, metabolic assignment, or fat storage. On the other hand, medium-chain triglycerides breeze through the intestines with ease to the bloodstream, where they travel directly via the portal vein to the liver.

Unlike longer-chained fats, they do not require conversion to water-soluble molecules and then follow a detour via the lymphatic network prior to being processed within the liver. They're also metabolized up to eight times faster than carbohydrates. Furthermore, they're not stored as fat and don't require the body's limited supply of L-carnitine for transport into cells to fuel cellular respiration.

The two most popular and efficient medium-chain triglycerides are caprylic (C8) and capric (C10) fatty acids. The numerical reference notes the chain length of carbon atoms that comprise their backbone. Several dairy sources including cheese, butter, milk, and yogurt contain MCTs; however, coconut and palm kernel oils are the best natural sources of both C8 and C10 fatty

acids available in supplement form. The biological activity of C8 and C10 fatty acids is the same, regardless of their source. Most popular brands are formulated with an approximate 60/40 ratio sourced from both oils.

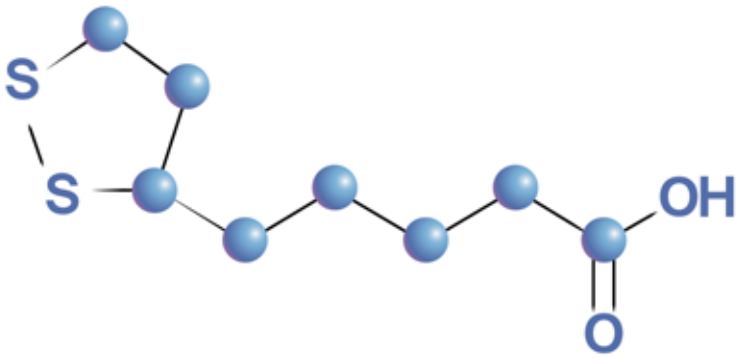
MCTs populate many therapeutic niches. They're a frequent addition to the diets of people afflicted with malabsorption syndrome, as an ingredient in meal-replacement beverages that target seniors, and can morph your morning cup of brew into a functional beverage, when paired with a dollop of butter and a dash of cinnamon. Their versatility also makes them invaluable for compliance with a ketogenic diet.

With a calorie count measuring 100 per tablespoon, along with a neutral flavour, they're convenient to add to food, beverages, or even vinaigrettes. Their rapid rate of absorption and conversion to ketone bodies by the liver make them a hybrid fuel for body and mind. Their metabolic efficiency can help with weight-management initiatives as they help satisfy hunger faster to curb appetite. MCTs can also alleviate between-meal dips in energy that can make the pace of a work day grind to a halt.

Consider MCTs as the "fuel additive" to help set the pace for your active lifestyle.

alpha-Lipoic Acid

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



alpha-Lipoic acid (ALA) is an organosulfur compound and antioxidant that can be obtained from food as well as made endogenously within the body. ALA is associated with specific neuroprotective and metatolic effects. It has been used to treat neuropathy, diabetes, and insulin-resistance syndromes, as well as other conditions affecting the brain and the nervous system. A 2019 systematic review reports that ALA has also been studied for a variety of neurological conditions, with promising results, including stroke recovery and Alzheimer's disease.

Action

As an antioxidant, ALA has been shown in vivo to improve cellular antioxidant capacity and phases 2 detoxification enzymes such as catalase, reduced glutathione, glutathione reductase, and glutathione *S*-transferase. ALA is also a cofactor involved in mitochondrial function, the energy-manufacturing plant of the cell. It improves insulin signaling at the cellular level and increases glucose uptake. As such, ALA has been shown to improve glucose control, cholesterol, and inflammatory markers. These activities are also most likely related to the effects of ALA in the nervous system as well as in metabolism. Another role of ALA appears to be its ability to prevent excess copper and iron accumulation, tissue damage, and its possible mercury-chelating ability.

Diabetes

A 2018 meta-analysis of 24 randomized, controlled trials of patients with metabolic diseases, such as diabetes and metabolic syndrome, found that supplementation with ALA was associated with significant decreases in several parameters. These included fasting glucose, insulin, homeostasis model assessment of insulin resistance (HOMA-IR), and approximately 1.2-point decrease in hemoglobin A1c (a considerable change, since HbA_{1c} is optimal under 6%), triglycerides, and low-density lipoprotein cholesterol (LDL). Another meta-analysis by the same researchers found that ALA supplementation also decreased inflammatory markers in patients with metabolic diseases, including C-reactive protein (CRP), interleukin-6 (IL-6), and tumour necrosis factor-*alpha* (TNF-α).

In addition to effects in diabetes, ALA has shown activity in patients with insulin-resistance syndromes such as polycystic ovarian syndrome (PCOS). In PCOS, elevated insulin levels contribute to hormone

imbalances, causing poor ovulation and infertility. Supplementation with ALA in women with PCOS has been shown to improve insulin sensitivity, glucose, and body mass index (BMI); when used in combination with another insulin sensitizer, inositol, it has been shown to help regulate menses and female hormones.

Neuropathy

In addition to improving glucose control and insulin resistance, administration of ALA has been shown to reduce diabetic neuropathy. This type of neuropathy involves altered sensation, pain, and tingling in the hands and feet, most often associated with long-standing or uncontrolled diabetes. A randomized trial of 24 patients with type 2 diabetes and neuropathy found that supplementation with 600 mg ALA three times daily for three weeks resulted in significantly improved pain and disability scores compared to placebo.

A more recent trial, involving 460 patients with diabetes taking 600 mg ALA or placebo daily, found that although there was no difference in the composite endpoint, there was a significant improvement in measures of lower-limb symptoms and muscle weakness compared to placebo. In addition, more patients receiving ALA showed a clinically meaningful improvement, and fewer showed progression of neuropathy as assessed by the Neuropathy Impairment Score (NIS).

One study has also shown promise in patients affected by cardiac autonomic neuropathy, a type of nerve damage that results in heart-rate irregularities.

Another study found that supplementation with ALA may also protect against deterioration of diabetic retinopathy, a disease process that affects the eye and can eventually lead to blindness. Based on the effect of ALA on this type of diabetic end-organ damage, it may be rational to use ALA to treat other diabetic complications including kidney damage.

Neurodegenerative

ALA has been evaluated in patients with multiple sclerosis (MS). In one study, 24 patients with relapsing-remitting MS were treated with 1200 mg ALA or placebo daily for 12 weeks. Researchers found that, although 2 of 12 patients in the placebo group had declines in functioning, none of the patients receiving ALA did. Another study by the same group found that supplementation with ALA among patients with MS reduced levels of inflammatory cytokines, including INF-γ, ICAM-1, TGF-β, and IL-4. More research is needed in this area.

Conclusion

In conclusion, *alpha*-lipoic acid has a number of metabolic and antioxidant effects, including involvement in mitochondrial energy production, increasing glutathione activity, improving insulin sensitivity, as well as antiinflammatory and neuroprotective effects. ALA may be beneficial in diabetes, neuropathy and other diabetic complications, PCOS, and neurodegenerative conditions. Patients with diabetes are advised to consult with a licensed health-care provider prior to use.

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Probiotics, Prebiotics, and Beyond!

Treatment and Prevention of Antibiotic-Associated Illnesses

by Dr. Angeli Chitale, BSc, ND

Antibiotics have been life-saving miracle drugs of the 20th century. However, the problem of antibiotic-resistant superbugs and microbiome disruption has posed a serious health threat in the 21st century. The average Canadian takes one course of antibiotics every 18 months. Unless specific action to reestablish microbiome balance is taken, antibiotic use poses a two-part health risk by:

1. Creating antibiotic resistance
2. Increasing antibiotic associated illnesses

Antibiotic resistance is the increased spread of disease-causing bacteria "superbugs" that are resistant to antibiotic treatment. It is estimated that by 2050, 2.4 million deaths in developed countries (Canada, USA, Australia, New Zealand) will be due to untreatable antibiotic-resistant infections.

Antibiotic-associated illnesses are conditions caused by microbiome disruption. Statistics show that increased antibiotic use is directly related to an increase of the following diseases:

- Allergies
- Eczema
- Intestinal diseases (SIBO, *Candida* overgrowth, IBS)
- Autoimmune conditions
- Metabolic diseases (diabetes, metabolic syndrome, childhood obesity)

With the increase of antibiotic overuse in farming, medicine, and hospital care, it has become essential to treat with probiotics to rebalance the microbiome whenever antibiotics have been used in patient care.

What's the Microbiome?

Picture a rainforest—an ecosystem of diverse and undiscovered species living in a delicate balance, the product of millenia of evolution. The human microbiome is similar to a rainforest with diverse microorganisms living in balance (bacteria, fungi, parasites, and viruses). These microscopic inhabitants live inside and on the surface of our bodies and have evolved with humans over time. The human body is made up of 40 trillion cells, of which 30 trillion are the microbiome. In other words, ¾ of our cells live in the microbiome, making us proportionately more microorganisms than human!

Probiotics are sources of the beneficial or "good" bacteria that live inside our bodies and make up a large part of our microbiome. Fermented foods have been the main source of probiotics for centuries. For therapeutic use, concentrated isolated probiotic strains are available as supplements.

In clinical practice, the two most common questions patients ask about probiotics are:

1. Why do I need to take probiotics?
2. How long do I need to keep taking this for?

After considering your health history since birth, the answer is two-part:

1. What is your current diagnosis and symptoms?
2. What is the state of your microbiome? Your microbiome can be evaluated with specific lab tests which assess the health of your microbiome—ask your health-care provider for details.

Angeli Chitale, BSc, ND

Dr. Angeli Chitale is a licensed naturopathic doctor, with additional training and qualification in treatment of both thyroid and endocrine conditions including fertility for men and women.

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What does the microbiome do? The microbiome maintains and manages several essential functions in the body:

1. Balances the immune system throughout life (from birth till end of life)
2. Supports essential metabolic functions:
   - Regulates gut-brain axis (neurotransmitters serotonin and dopamine produced in the gut, travel to the brain, and regulate mood)
   - Mitochondrial function (energy production inside every cell in the body, except red blood cells)
   - Detoxification
   - Food supply for good bacteria and intestinal cells (short-chain fatty acids)
   - Antiinflammatory (inflammation is part of every illness; it prolongs and complicates recovery from illness, interferes with healing, and is the source of physical pain)

Antibiotics are the main disruptor of microbiome balance and function. As a result, antibiotic-associated illnesses such as allergies, eczema, autoimmune conditions, childhood obesity, as well as intestinal and metabolic diseases, are on the rise.

Treatment and Prevention of Antibiotic-Associated Illnesses

Prebiotics are the good food which feed your good bacteria. Soluble fibre is a prebiotic which comes mainly from plant-based foods. The SAD (standard american diet) has about 4 g of soluble fibre present, whereas the Mediterranean diet has about 15–20 g of soluble fibre. Canada's updated Food Guide emphazises plant-based nutrition, which is a great source of prebiotic fibre.

- Food sources of prebiotics: beans, root vegetables, apples, pears, broccoli, and Brussel's sprouts are some good sources of soluble fibre.
- Probiotic foods: all the fermented foods (usually lactofermentation) such as sauerkraut, and pickled vegetables such as carrots, beans, beet, onions, garlic, kim-chi, and olives.
- Probiotic suppplements: Is my probiotic strong enough? For small intestine conditions such as IBS and small intestinal bacterial overgrowth (SIBO), a minimum of 10 billion *Lactobacilli* and *Bifidobacteria* cells has been shown to be clinically beneficial. For large intestine conditions such as Crohn's and ulcerative colitis, a minimum of 50 billion *Lactobacilli* and *Bifidobacteria* cells is often recommended by clinicans and supported with research.

It is important to work with a qualified and trained clinician, such as a naturopathic doctor, when starting and monitoring any treatment plan.

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PROUDLY

D-Ribose
A Therapeutic Sugar

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

D-Ribose is a naturally occurring pentose molecule—a 5-carbon sugar—that is involved as an intermediary in the production of adenosine triphosphate (ATP) within the mitochondria of the cell. ATP is the basic energy unit of the cell. For this reason, D-ribose has been evaluated in a number of conditions associated with muscle function, including performance enhancement in athletes, chronic fatigue, and fibromyalgia, as well as cardiac function. This article will review the evidence pertaining to D-ribose in these conditions.

Performance Enhancement

Muscle ATP stores are rapidly depleted during exercise. Recovery of ATP levels has been shown to take up to several days, which "ultimately can affect performance and potentially the ability to exercise to a full extent day after day." It is thought that supplementation with D-ribose may help replete muscle ATP following exertion.

In a double-blind, crossover trial, 26 healthy individuals were treated with either 10 g daily of D-ribose or dextrose for five days. The first two days were loading days, during which the subjects rested and supplemented with the assigned treatment. For the next three days, subjects underwent 60 minutes of high-intensity interval exercise in separate daily sessions, which involved cycling, followed by a 2-minute power output (PO) test. The results showed that both the average and maximum power output increased in the D-ribose group compared to the dextrose group. In addition, both reports of perceived exertion as well as a blood marker of muscle damage, creatine kinase (CK), were lower in the D-ribose group, indicating better performance and less muscle damage associated with D-ribose supplementation.

Cardiac Function

Since the heart is a specialized muscle, it follows that supplementation with D-ribose may also benefit cardiac functioning. A prospective, double-blind, randomized, crossover design study evaluated the effect of D-ribose or placebo for three weeks in 15 patients with coronary artery disease and congestive heart failure (CHF). Results showed that patients treated with D-ribose exhibited better diastolic function—the functioning of the heart while the heart is at rest and not in contraction—compared to placebo. Specifically, the administration of D-ribose resulted in an enhancement of atrial contribution to left ventricular filling, a smaller left atrial dimension, and a shortened E wave deceleration detected by echocardiography. D-Ribose supplementation also significant improved patients' quality of life.

A pilot study including 11 patients with New York Heart Association stage II–IV heart failure found the supplementation with D-ribose improved cardiac parameters in some of the patients over a six-week period. Patients were supplemented with 5 g D-ribose per day. After six weeks, 64% of

patients showed improvements in tissue Doppler velocity, a way of measuring systolic and diastolic heart functions. There were some other beneficial trends, and researchers concluded that more study is necessary.

A review paper discussed the potential benefits of D-ribose in ischemic heart disease, a narrowing of the coronary arteries by atherosclerosis that leads to reduced oxygen delivery to the heart; when severe enough, this can precipitate angina or a heart attack. This review suggests that since ischemia results in reduced energy or ATP production in the heart muscle, supplementation with D-ribose may be able to alleviate this. Indeed, D-ribose has been shown to "increase cellular energy levels and improve function following ischemia in preclinical studies." In mice with right ventricular hypertrophy due to poor oxygenation and ischemic heart disease, supplementation with D-ribose in combination with creatine "almost completely reversed" the damaging effects of hypoxia.

Fibromyalgia

A pilot study evaluated 41 patients with fibromyalgia (FM) or chronic fatigue syndrome (CFS), administering 5 g D-ribose three times daily (15 g/d) for approximately 18 days. After this treatment period, approximately 66% of patients reported significant improvement in energy, with an average 45% increase, as well an average 30% improvement in overall wellbeing.

Diabetes

Finally, a concern has arisen in regard to the safety of D-ribose in diabetes. One study suggested, based on indirect animal and human testing, that both glucose and endogenously produced ribose may react with hemoglobin in the bloodstream to form glycated hemoglobin, also known as hemoglobin A_{1c} (HbA_{1c}). This study did not involve actually supplementing D-ribose to the animals or humans; rather, it was based on positive associations between levels of hemoglobin A_{1c} and blood or urine levels of D-ribose. This is suggestive at best, and certainly not conclusive.

However, HbA_{1c} is important because it is used as a measure of average blood-glucose control in patients with diabetes, and there was some concern whether supplementing D-ribose could increase this marker and whether this might have any detrimental effect on the course of diabetes.

Another study evaluated the effects of supplementing D-ribose in vivo to animals to evaluate the effect on HbA_{1c} levels. Two groups of thoroughbred race horses received 30 and 50 g of D-ribose daily for 17 weeks. During this time, they were also exercised. At the end of the study, there was no detectable increase in their blood levels of HbA_{1c}, and, in fact, the researchers observed that the horses had better muscle recovery and decreased cramping. This study provides stronger evidence than the earlier study that D-ribose likely has minimal effects on HbA_{1c} in humans.

Conclusion

In conclusion, D-ribose is a therapeutic sugar molecule that has potentially beneficial effects on muscle function in various contexts, including sports performance, ischemic heart disease, and congestive heart failure, as well as fibromyalgia and chronic fatigue. D-Ribose supplementation appears to have little effect on HbA_{1c} levels in humans.

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Allergic Rhinitis

Curcumin and Probiotics Can Help

by Dr. Melissa Descoteaux, ND

Allergic rhinitis (AR)—known for causing watery eyes, sneezing, runny nose, itchy eyes, and nasal congestion—is becoming more common in developed countries. In Canada, up to 44% of individuals claim to have experienced AR symptoms, while 20% have been diagnosed by their medical doctors. For some, it happens mostly during spring or fall, termed "seasonal allergies," and for others, it is present all year round, aka "perennial allergies." Other symptoms of allergic rhinitis include fatigue, poor concentration, and reduced productivity, all of which are more systemic and can significantly affect quality of life.

AR symptoms are due to an inflammatory response of the nasal mucosa as well as mucous membranes of the ears, sinuses, or pharynx. They are triggered by exposure to various environmental allergens. These allergens may be indoor—such as dust mites, pet dander, or mold—or outdoor—such as pollen from grass, weeds, trees, or other outdoor molds.

Many turn to over-the-counter (OTC) medications such as decongestants, antihistamines, or intranasal corticosteroids to manage their symptoms, with roughly 60% feeling their symptoms are somewhat controlled during the worst months of the year. Naturopathic medicine may provide alternative or complementary treatments to OTC medications to help reduce AR symptoms and improve quality of life. Wouldn't we all love to stop and smell the roses during the spring?

Immune Response to Allergens

Our immune system has evolved to protect us against viruses, bacteria, fungi, and parasites. However, if it behaves abnormally and responds to benign triggers such as airborne pollen, it causes an unwanted immune response. There are two main arms of the immune system. The innate immune system is front-line defense and acts rapidly against infections; it is not antigen-specific and does not have immunological memory of previous infections. The other arm of the immune system is the adaptive immune response. It is slower to respond, sometimes taking up to days, but exhibits immunological memory and is antigen-specific, meaning the immune response may strengthen with each exposure to antigens.

The inflammation of mucus membranes in AR is the result of an adaptive immune response, more specifically an immunoglobulin E (IgE)–mediated immune response. IgE is an antibody produced by the immune system which binds to the surface of mast cells. When IgE comes into contact with allergenic proteins, aka antigens, mast cells are triggered and release inflammatory mediators such has histamine. This increases the permeability of blood vessels, which allows white blood cells and some proteins to reach the specific area, causing inflammation of local tissue such as mucous membranes of the nose, ears, and eyes.

Diagnosis

The two most common methods of identifying allergic antigens are the skin-prick/scratch test and a blood test called fluorescence enzyme immunoassay (FEIA). The skin-prick test measures the immediate IgE reaction to a variety of allergens. The procedure involves inserting an extract of the allergen under the skin surface, usually of the forearm. A positive result is noted by the formation of a hive due to local histamine release of mast cells. On the other hand, the FEIA is a blood test that indirectly measures serum levels of IgE associated with certain antigens. It is not as sensitive or specific as the skin test, but can be useful in determining specific allergens.

Interventions

Avoidance

Once specific allergens have been identified, the main way to prevent allergic symptoms is avoidance. Regarding outdoor allergens, this means avoiding outdoor exposure during times of the year when specific pollens are highest. For example, tree pollen is usually highest in the spring, grass pollen in early summer, and weed pollen in late August into September.

Also, making sure windows and doors are closed, using the recirculating mode of air conditioners, and taking a shower after being outside can help remove excess pollen form your skin and hair. These are the best ways to help prevent allergic symptoms from outdoor allergens.

For indoor allergens, washing linens at least twice a month in hot water, and using hypoallergenic mattress and pillow covers can help reduce exposure to dust mites. In addition, dust mites thrive when humidity is more than 50%, so a dehumidifier may be useful. Lowering indoor humidity may also prevent the formation of mold, which is another common indoor allergen. It is best to avoid carpet altogether, especially if pets are present. Regarding animal allergies, avoidance is best, but for those who do have an allergy to animals and are exposed, HEPA air filters can be useful; especially for cat dander. Furthermore, it is important to not only avoid indoor and outdoor allergens, but also respiratory irritants such as cigarette smoke and perfumes, as well as rapid changes in temperature and air pollution, which increase local inflammation and can aggravate allergic symptoms.

Curcumin

Curcumin is the active ingredient in turmeric, a perennial tuber native to Southeast Asia. It has strong antiinflammatory effects, comparable to those of hydrocortisone. In mice, it has shown benefit in decreasing rhinitis symptoms by decreasing immune mediators such as IgE, which also plays a role in human allergic rhinitis. As a result, one study explored the effect of curcumin supplementation to alleviate sneezing, runny nose, and nasal congestion in adults. The study included 241 participants with perennial (aka all-year-long) AR who had positive skin-prick test results to multiple allergens. All participants had experienced symptoms for a minimum of two years, and they were not on any other pharmacological treatments during the study.

Half of them received 500 mg of curcumin orally per day, and the other half received placebo treatment. After two months, nasal symptoms (sneezing, runny and itchy nose, obstruction) had significantly decreased in the curcumin group, with no change seen in the placebo group. Symptoms were measured by participants filling out a symptoms-rating scale before and after treatment. Nasal congestion also improved in the curcumin group and not in the placebo group. In addition, those receiving curcumin had decreased levels of IL-4, which mediates the production of IgE and is known to be elevated in individuals with AR symptoms.

Probiotics

Probiotics refer to live microorganisms that, when introduced to the digestive system, may improve digestion as well as overall health by modulating the immune system. As a result, probiotics may play a role in reducing allergic symptoms. In fact, the effect of the human microbiome on the immune system has been well studied. Although the evidence for probiotics as a treatment for AR is conflicting, it does show some benefit.

A study demonstrated an improvement in quality of life regarding seasonal allergy symptoms. For the randomized control trial, 173 adults were divided into two groups: The treatment group received one capsule of probiotics containing 1.5 billion CFU two times daily, from March to May (eight weeks), during spring-allergy season; the placebo group received the same treatment, but with a capsule containing no probiotics. At the end of the eight-week period, the probiotic group reported an improvement in quality of life based on a questionnaire; however, no change in immune markers was seen. This means there was a benefit with probiotic treatment, but the mechanism is unknown.

Another study also found improvement in quality of life for individuals with persistent AR symptoms. The difference in this study was that all participants were also given loratadine, an antihistamine used to treat AR symptoms. The treatment group received one probiotic capsule of 2 billion CFU daily for five weeks during grass-allergy season. Although no changes in rhinitis symptoms (nasal obstruction, sneezing, itchy nose) were seen between groups, itchy eyes did improve. In a third study, 27 adults with known grass allergy were given a specific strain of probiotic, *Bidifidobacterium lactis* NCC2818, 4 billion CFU daily for eight weeks or placebo. After five weeks of treatment, nasal symptoms were significantly lower in the probiotic group compared to the placebo group. Furthermore, immune markers, usually high with allergic symptoms, were lower in the treatment group, which demonstrates a possible immune-regulatory effect of probiotic supplementation dependent on strain.

Conclusion

Allergic rhinitis can be triggered by several environmental allergens. The main way to prevent symptoms is to avoid exposure to specific allergens; however, general avoidance without knowing the exact allergens is not recommended. To identify allergens, a skin-prick test should be performed by an allergist. If symptoms do arise, OTC medications may be used to control symptoms, but the use of natural interventions—such as curcumin and probiotics—may also help reduce nasal and eye symptoms as well as improve quality of life during allergy season. Larger studies are needed to confirm the efficiency of these supplements, in addition to appropriate dosage and duration of treatment for the prevention of AR symptoms.

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Melissa Descoteaux, ND

Dr. Descoteaux is passionate about empowering others to take control of their health. She is a licensed naturopathic doctor practising in downtown Toronto and Summerhill.

melissadescoteauxnd.com

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PROUDLY

St. John's Wort

Going to Nature's Happy Place

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

St. John's wort (*Hypericum perforatum*) is one of the oldest and most investigated herbs used; it is a perennial with abundant yellow flowers, best known for its antidepressant, anxiolytic, antiviral, antibacterial, antiinflammatory, and analgesic properties. St. John's wort is so named because it flowers in the midsummer, around St. John's-the-Baptist's Day on June 24th. It grows widely in Europe and North America. Earliest reports of medicinal use of this herb date from the early Greeks and Romans in the first century CE, as well as later on by Paracelsus around 1500 CE. In modern times, St. John's wort has been extensively studied for its antidepressant effects.

Action

St. John's wort has been shown to contain several classes of chemical constituents, including naphthodianthrones, xanthones, flavonoids, phloroglucinols (e.g. hyperforin), and hypericin. Of these, hyperforin and hypericin are thought to be mostly responsible for its medicinal effects.

The precise mechanism of action of St. John's wort in mood regulation is not well understood, but studies have shown that St. John's wort may interact with various neurotransmitter (i.e. signaling) systems in the brain. Vance et al describe this as follows: "St. John's wort extract has been postulated to inhibit the neuronal uptake of neurotransmitters such as serotonin, norepinephrine, dopamine, *gamma*-aminobutyric acid (GABA), and L-glutamate, alter noradrenergic and serotonergic receptor expression, and inhibit monoamine oxidase enzymatic activity. […] Hyperforin is believed to activate the nonselective cation transient receptor potential (TRP) channel TRPC6 to increase intracellular sodium and calcium content, therefore reducing neurotransmitter reuptake."

Evidence

Several meta-analyses of clinical trials have shown that St. John's wort is effective in treating mild to moderate depression. A meta-analysis of 35 randomized controlled trials examining 6993 patients found that St. John's wort was associated with more treatment responders compared to placebo, and that subjects taking St. John's wort were less likely to experience adverse events, with no difference in treatment effectiveness in mild and moderate depression. Patients who received St. John's wort experienced fewer adverse effects of the gastrointestinal and neurological body systems, and fewer adverse effects affecting sexual function and psychiatric function.

A Cochrane review evaluated data from 29 randomized controlled trials including 5489 patients; 18 studies compared St. John's wort with placebo and 17 compared with synthetic standard antidepressants.

The analysis concluded that St. John's wort extracts are:

1. superior to placebo in patients with major depression;
2. similar in effectiveness as standard antidepressants; and
3. have fewer side effects than standard antidepressants (participants were less likely to drop out of studies due to side effects, suggesting a considerable difference in the tolerability of treatment).

Given that Cochrane is generally quite conservative in its conclusions regarding the treatments reviewed, these results are noteworthy to be sure.

Additional Effects

In addition to mood-regulating effects, St. John's wort and its compounds have demonstrated a range of intriguing activities, including antiinflammatory effects, neurological effects, and even possibly anticancer effects:

- Inhibition of inflammation through inhibition of janus kinase 1 enzyme (hypericin);
- Reduction of inflammation by decreasing TNF-α (which activated NF-κB pathway) in patients with psoriasis, and reducing psoriasis plaques (topical application);
- Modulatation of brain cortical plasticity in humans (*Hypericum* extract WS® 5570);
- Induction of apoptosis in non–small-cell lung cancer cell lines, associated with activation of the p38 MAPK and JNK induced mitochondrial death pathway (hyperoside).

Traditionally, St. John's wort has also been used topically for its antiinflammatory, antibacterial, and analgesic effects for various kinds of external wounds and traumas. St. John's wort is traditionally used internally for urinary tract infections, digestive infections such as infectious diarrhea, as well as injuries of the nervous system including concussions.

Drug Interactions

St. John's wort may interact with a number of medications, including selective serotonin reuptake inhibitors (SSRIs) and other antidepressants, cardiovascular medications such as warfarin and digoxin, oral contraceptives, anticonvulsants, triptans, immunosuppressants such as cyclosporin, theophylline, HIV protease inhibitors, and anticancer agents. The hyperforin content in St. John's wort is thought to be responsible for these interactions through induction of the CYPP450 enzymes and p-glycoprotein drug efflux pump.

Conclusion

St. John's wort is an herb with a long history of use and good depth of scientific research. It has been shown to be effective for mild to moderate depression. Evidence suggests its effectiveness is similar to that of pharmaceutical antidepressants. Additional effects include antiviral and antibacterial effects, antiinflammatory effects, and possible effects on cognition. Due to potential interactions with many medications, individuals should consult a licensed health-care practitioner prior to use, in order to determine whether St. John's wort is an appropriate treatment strategy for them.

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

A Healthy Diet is so Much More Than *Just the Food You Eat*

by Guillaume Landry, MSc, Naturopath

The new 2019 Canada Food Guide reflects a paradigm shift in the way some public entities are promoting good health through diet, as well as how they are favouring more universal principles. Its systemic approach, free from the pressure of lobbyists, echoes the holistic mindset of the 2017 Brazilian guide.

The new Canadian guide ousts the old quantitative requirements and emphasizes qualitative recommendations: Out with portions and in with proportions! The focus is not only on nutrition, but also on the environment, sociocultural context, consumption habits, psychological aspect, and more. The elements very directly influence the quality of food as much as they promote more equitable and responsible behaviour. This confirms what the natural health products industry has been promoting for more than 50 years: A more natural, committed, and equally exquisite diet!

- *Be more aware of your eating habits*
- *Cook more often*
- *Take time to enjoy your food*
- *Share your meals with good company*
- *Take advantage of food labeling*
- *Limit highly processed foods*
- *Be aware of the food product marketing*

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The Protein Myth

Vegetarians Can Get Enough Protein

by Dr. George Cho, ND

"Vegetarians will be deficient in protein, because plant protein is not as easily digestible."

"The quality of plant protein is lower than animal protein."

"I know people who went vegetarian and they got sick."

These and others are common arguments raised by critics of vegetarian and vegan diets to imply that one will become protein-deficient if he switches to a vegetarian. Protein is the one nutrient that people tend to really focus on when it comes to conversations about going more plant-based. This article will seek to try to answer some of these common concerns.

It is the opinion of the author that vegetarians are not doomed to become protein-deficient just because they have made the switch from an omnivorous diet to a fully plant-based one. Contrary to popular belief, flesh foods are not a necessary source of protein. This is traditionally held belief, and as is the case with many such beliefs, it falls in the realm of myth, not facts.

Protein Intakes of Vegetarians Can Be Similar to That of Nonvegetarians

There is evidence to suggest that vegetarians and nonvegetarians do not vastly differ in the protein content of their diets. For example, a very large study involving 71,751 subjects was undertaken as part of the Adventist Health Study 2 project. Researchers used that data set to compare the nutrient intakes of different dietary patterns, including various types of vegetarians. What they found was that semivegetarians, pescovegetarians, lacto-ovovegetarians, and even strict vegetarians all had nonsignificantly different intakes of total protein in the diet compared to nonvegetarians. What this very large data shows is that one's protein intake does not necessarily decrease after switching to a vegetarian diet.

After reading this, however, people may be quick to point out that the above information does not amount to much. Skeptics will be quick to respond: "Plant proteins are missing essential amino acids" or "They are not as digestible compared to animal proteins." These are points that will be addressed below. However, the point of this particular bit of science is to counter those who raise questions like: "Where do you get your protein?" The assumption in a question like this is that somehow, because one is no longer eating animal flesh, there is nowhere else to obtain protein. This is clearly false, as the study results demonstrate. Even vegans had dietary patterns that contained similar amounts of protein

to that of the nonvegetarians. Remember: Vegans do not even consume any dairy or eggs. However, the beans, vegetables, fruit, and grains that they are consuming are providing the protein that the body needs.

Vegetarian Diets Can Match Protein Quality of Nonvegetarian Diets: The Protein Myth

As mentioned above, one common concern raised about plant sources of protein is the quality of the protein. Most animal-derived foods contain what would be considered "high-quality" proteins. This means your steak, burger, chicken wings, etc. will contain large amounts of all essential amino acids. Some argue that plant-sourced proteins are of lower quality because they are missing or deficient in the essential amino acids. What people fail to realize, however, is that plant-protein sources usually have all the essential amino acids as well, but may be low in one or two of the amino acids. For example, lysine is an amino acid that tends to be low in cereal grains. Legumes are low in methionine. However, who only eats grains all day? Which vegan only consumes legumes? If one combines legumes, for example, with other foods, the quality is "comparable to protein of animal origin." This is the same for other vegetarian protein sources. When one consumes a varied diet of plant-based foods, he will be obtaining all the essential amino acids the body requires. It is also worth pointing out that soy, quinoa, and amaranth contain high amounts of all the essential amino acids. Vegans and vegetarians would do well to consider incorporating these foods into their diet. It is a myth to suggest that because one is a vegetarian, he will be missing essential amino acids.

Digestibility

Another argument people raise is about the lower digestibility of plant-based proteins. The Protein Digestibility-Corrected Amino Acid Score (PDCAAS) evaluates food on not just the amount of amino acids, but also on the ability for humans to digest the protein from the food. So, simply put, even if a food has loads of protein, if the protein from that food source is not easily digestible, then it would ultimately be of little value to contain a lot of protein if the amino acids are difficult to extract. To illustrate: A counter-full of candy is of little value to a child who has difficulty reaching the counter to get the candy. Quantity is of little value if that quantity is difficult to obtain. This illustrates why the PDCAAS is worth considering, and why critics bring it up.

So, does protein from plant sources have lower digestibility than animal proteins? The answer is absolutely "Yes." When one considers the PDCAAS of meat/animal proteins, the PDCAAS is near or equal to 1.0 (the highest score). This means animal-sourced proteins are very easily digestible. Plant-based proteins, on the other hand, are generally lower in the PDCAAS; it is easier to extract the amino acids from your chicken wings than from your salad. The exception may be soy protein, which has a PDCAAS near 1.0.

However, the error that some make is to assume that the lower PDCAAS automatically equates to "protein-deficient." They jump to the conclusion that because the PDCAAS of plant-based protein sources are lower than meat sources, this means that a vegetarian/vegan diet will

mean a deficiency in protein. This is a leap in logic, an erroneous and nonsensical assumption. Just because the PDCAAS is lower does not mean that the whole diet will be deficient. It just means that the PDCAAS of plant-protein sources are lower. The PDCAAS does not take into consideration the total context of a person's day-to-day diet; it just evaluates the individual sources. Vegetarians and vegans can meet their protein needs if they consume a varied diet including a variety of protein sources, and if their caloric intake is adequate.

The most recent position paper of the Academy of Nutrition and Dietetics, published in 2016, states unequivocally that a well-balanced vegetarian or vegan diet can meet protein needs. The authors of that position paper state the following:

> *"Vegetarian, including vegan, diets typically meet or exceed recommended protein intakes, when caloric intakes are adequate. The terms complete and incomplete are misleading in relation to plant protein. Protein from a variety of plant foods, eaten during the course of a day, supplies enough of all indispensable (essential) amino acids when caloric requirements are met. The regular use of legumes and soy products will ensure an adequate protein intake for the vegetarian, as well as providing other essential nutrients."*

If people want to argue that animal proteins are more "complete" and more digestible, that is fine. If folks want to say that we can get more protein from animals, they may have a point. If they conclude that animals are an easier way to get protein, they could be right. However, let us not go around giving off the impression that vegetarians and vegans will be protein-deficient; this would be false.

Is the Diet at Fault or the Implementation?

Even after one shows that a vegetarian can still meet their protein requirements, critics will inevitably pull out the argument of example. It is common for critics to point out individuals they know who have gone on a vegetarian diet and have not found that it works for them. The implication, whether stated verbally or obviously implied, is that the non–success stories are a kind of "proof" that the approach does not work. The impression that is given off is: "I get what you're saying about vegetarians getting enough protein, but my examples seem to trump your evidence." Thus, from the example, a general conclusion is drawn, as if to say: "This is why you shouldn't become vegetarian."

However, there are several errors to this line of reasoning:

Individual Exceptions Do Not Negate the General Science:
Though we can appreciate the very real challenges some may face with implementing a shift in dietary patterns, exceptions still do not trump what the science suggests in general. That is: A vegetarian can obtain enough protein, and a vegetarian can still live a healthy and vibrant life.

It Automatically Blames the Diet, Not the Individual: Though we do not want to be insensitive, it must still be pointed out that the success of any lifestyle pattern is generally dependent on an interplay between the individual and the lifestyle pattern itself. In some cases, the lifestyle pattern is so extreme that no amount of human striving and perseverance can reasonably be expected to achieve that lifestyle. A case in point may be fruit diets or juice diets. However, sometimes, the lifestyle is reasonable and fully within the bounds of possibility, but the individual and other variables may be the determining factor that leads to failure. Thus, while there are examples of people who have not found the vegetarian diet to be helpful or have experienced challenges, it should not automatically be concluded that the fault lies with the vegetarian diet; many different variables can be at play. Polish researchers suggest something along the same lines in their review of vegetarian diets when they say:

> *"Further studies have stressed that only a properly balanced vegetarian diet is beneficial to health. Whenever a vegetarian diet is ineffective, it is likely that dietary errors may have been made during its adoption."*

For Every Non–Success Story, There Are Many Success Stories: Many vegetarians do live vibrant lives. Studies on vegetarians are showing that they are setting themselves up to increase the chances of living healthier lives. Large population studies show that vegetarians have significantly lower risks of getting and dying from many of the leading chronic diseases of today, including type 2 diabetes, heart disease, hypertension, and even some cancers. If one looks at the geographical areas known as the "Blue Zones" (areas with the largest proportion of centenarians), the Loma Linda, California Blue Zone has a large proportion of vegetarians and vegans. Also, within this Blue Zone, the vegetarians are outliving their nonvegetarian counterparts.

Conclusion

Adoption of vegetarians and vegan diets is on the rise. With this comes concerns that the elimination of animal flesh may result in nutritional deficiencies. Though some concerns may be well-grounded, it is the opinion of this author that the commonly raised concern of protein deficiency is often exaggerated and too frequently rehashed as fact, despite the science to the contrary. Certainly, there may be those for whom a vegetarian or vegan diet would not be suitable. However, the notion that one cannot obtain their protein unless it comes from animals does not hold up under investigation. It is high time to lay the protein myth to rest.

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

George Cho, ND

Dr. Cho's doctorate studies in naturopathic medicine were completed at the Canadian College of Naturopathic Medicine. His clinical experience includes work at the Robert Schad Naturopathic Clinic, Dundas Naturopathic, LAMP Naturopathic Clinic, and Wildwood Lifestyle Centre. His focus is on lifestyle medicine.

drgeorgecho.com

Berry Delicious Lentil Smoothie

This smoothie is loaded with fibre, protein, and healthy fats, making it an excellent and well-balanced meal replacement option to fuel your day and your body.

Ingredients

- ⅓ cup canned or cooked lentils (if canned, rinse well)
- 1 cup almond milk (add more if needed)
- 1 tsp. coconut oil
- ½ cup frozen berries of choice
- 1 banana
- 2 tbsp. hemp seeds

Instructions

Blend everything together and enjoy! If you want to keep your smoothie cool, add some ice.

Cheers to happy and healthy eating!

Nutritional Breakdown

- 400 calories
- 18 g fat
- 52 g carbohydrates
- 13 g fibre
- 15 g protein
- and zero added sugars!

Angela Wallace

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

Easter Swirl Cheesecake

Raw, Vegan, Paleo, Dairy-Free, Gluten-Free, and Refined Sugar–Free

Crust

Ingredients

- ¾ cup cashews
- ½ cup shredded coconut
- ¼ cup pitted dates
- 1 tsp. water

Instructions

Grind the cashews and coconut to fine crumbs in a food processor. Add the water and blend again. The mixture should easily hold together when pressed in your hand; otherwise, add another ½ tsp. water. Press into a 7″ spring form pan.

Heather Pace

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

sweetlyraw.com

Filling

Ingredients

- 2 cups cashews
- ⅔ cup water
- ⅓ cup maple syrup
- 2½ tbsp. lemon juice
- 1 tsp. pure vanilla extract
- ⅛ tsp. Himalayan salt
- ½ cup melted coconut oil
- 1½ tbsp. melted coconut butter

Instructions

Blend all but the coconut oil and butter in a high-speed blender until smooth. Add the oil and butter, and blend again to incorporate. Separate the mixture into 4 bowls. Blend each mixture with the "colours" below until you achieve your desired shade.

Pour a bit of each mixture over the crust, swirling them together with a chopstick after completing a layer. I ended up with three layers for maximum swirled effect. Place into the freezer for at least 6 hours; then into the fridge for 12 hours before slicing.

I used about four strawberries to get the colour I wanted, and I added an extra teaspoon of coconut butter to account for the liquid. I blended this in the blender and did the same with the blueberries, but for the other two colours, I whisked them in by hand in a bowl.

Colours

- Strawberries for pink
- Turmeric for yellow
- Blueberries for purple
- Blue majik for blue (or you can use spirulina for a light green)

Cheesy Pimento Dip

Raw, Vegan, Dairy-Free, Gluten-Free, and Refined Sugar–Free

If you are like me and no longer eat dairy, whether for health or ethical reasons, you know that the hardest part of this lifestyle change is the loss of yummy cheeses and cheese spreads.

I found there are a lot of raw vegan pimento recipes out there using cashews, bell peppers, lemon juice, and probiotic powder. Unfortunately, none of them tasted quite right to me and my family. In developing this recipe, my goal was to take the dairy-free pimento cheese experience to the next level, reflecting the depth, intensity, slight sweetness, and other flavour dimensions I remembered from regular pimento cheese dips. When I created this I was so happy, and am even happier to be able to share this delectable savoury treat with you—it's an awesome dip. Enjoy!

Ingredients

- **2 cups raw cashews, soaked and well rinsed**
- **1 cup chopped red bell pepper, packed**
- **3 tbsp. nutritional yeast**
- **2 tbsp. chopped onion**
- **2–4 tbsp. lemon juice, to taste**
- **1 tbsp. apple cider vinegar**
- **1 tsp. miso (chickpea or soy)**
- **1 tsp. New Roots Herbal Acidophilus Ultra (the contents of 5–6 capsules) or Ultra Max powder**
- **1–1½ tsp. Himalayan salt, to taste**
- **½ tsp. crushed hot red pepper flakes**
- **Black pepper, to taste**
- **¼ tsp. New Roots Herbal Stevia Sugar or favourite sweetener (optional)**

Instructions

Blend all ingredients in a food processor until creamy. Serve as a dip with crudités, chips, or crackers, or as a filling in wraps.

HOT TIP: Stirred into quinoa or rice, or on your favourite gluten-free pasta, this dip can be used to instantly create a delicious cheesy side dish.

Makes about 3 cups.

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*.

TheresaNicassio.com

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

Endometriosis—Naturopathic Approaches

The female reproductive system is a complex thing. And as such, it can be subject to certain complications and disorders that affect quality of life. Dysmenorrhoea, or pain during menstruation, is a common problem. While not necessarily the case, symptoms such as dysmenorrhoea, heavy or irregular bleeding [. . .]

A Healthy Diet is so Much More Than Just the Food You Eat (Complete Article)

The new 2019 Canada Food Guide reflects a paradigm shift in the way some public entities are promoting good health through diet, as well as how they are favouring more universal principles. Its systemic approach, free from the pressure of lobbyists, echoes the holistic [. . .]

Herbs at Home—Help Is Closer Than You Think

There are ways to ease your discomforts and help with your minor health concerns at home; in fact, these are as close as your kitchen. Plants grow all around us; some with medicinal value we might not be aware of. Beyond health-promoting fruits, vegetables and other plant-based foods [. . .]

Words of Gratitude from

CPAWS
CANADIAN PARKS AND WILDERNESS SOCIETY
SOUTHERN ALBERTA CHAPTER

New Roots Herbal supports the work of many charitable organizations with its Choose to Care program. The letter on the following page gives insight into the accomplishments of one of its partners.

New Roots Herbal is proud to be supporting CPAWS in their fight to protect wildlife and conserve their habitats; they are among the many charitable organizations supported by this program. Choose to Care continues to grow and donated in excess of $124,000 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!

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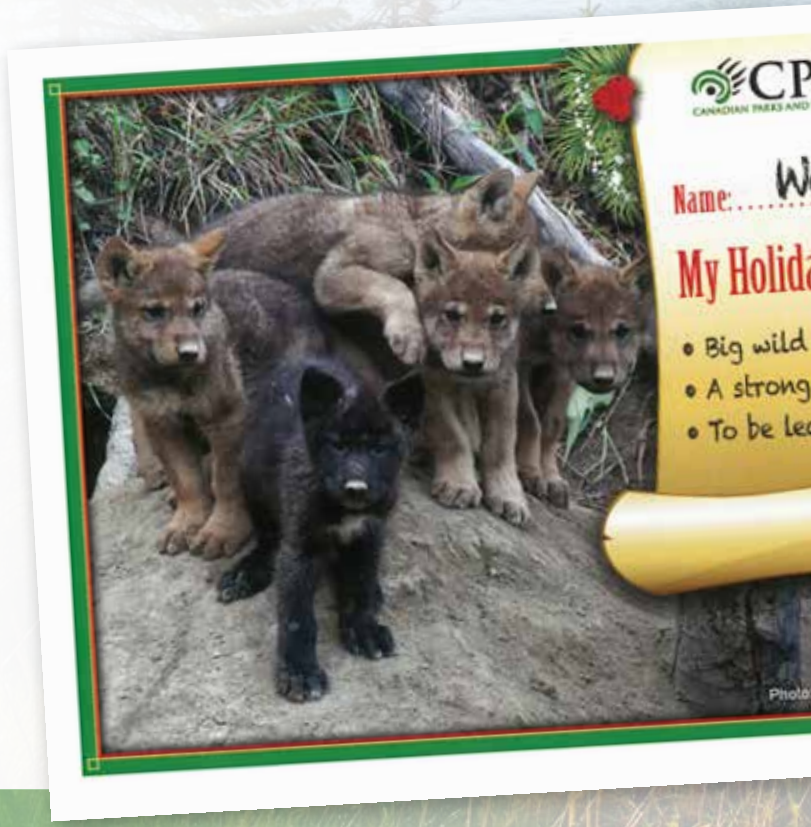

choosetocare.ca

Dec. 2018

Dear Peter,

2018 has been a big year for nature and this holiday season, we want to celebrate what we have achieved with your support!

In Alberta, we are celebrating the protection of 13,600 Km² of boreal forest by the provincial government. Off the coast of BC, we are celebrating the creation of the first ever marine National Wildlife Area! It protects 11,546 Km² at the Scott Islands.

We are also celebrating the settlement of our lawsuit on the Species at Risk Act, which resulted in the federal government promising to report on the extent to which habitat for all species at risk is protected by 2019.

These outcomes are just a start. This year the federal government agreed to invest $1.3 billion over 5 years for nature conservation.

Already we are seeing things start to move. There are many more wins for nature to come!

Thank you for supporting our work to protect nature. By trusting us with your conservation dollars and helping us speak out for nature, we are making a difference. Without out supporters like you, none of this would be possible.

2019 is going to be a big year for CPAWS – we are working on projects across Canada to protect more than half a million square kilometers of land and ocean by 2020.

We hope you will continue with us on this journey.

Happy holidays and thank you again,

Florence Daviet, CPAWS National Forest Program Director

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