Ketogenic Diets, History of Fasting, and the Future of Food for Longevity

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Ketogenic diets are high-fat, low-carbohydrate diets designed to force the body to burn fats, rather than carbohydrates, as fuel. The first clinically-described version of a ketogenic diet was created in the 1920s to treat refractory epilepsy in children. It contains a fat-to-protein ratio of 4:1 by weight, excluding breads, pasta, grains, sugar and other high-carbohydrate foods, and including foods higher in fat such as nuts and butter. Ketogenic diets have recently experienced a massive surge in popularity due to their use as lifestyle and weight loss diets, such as the modified Atkins diet. There is mounting evidence...
from research that demonstrates the potential benefits of high-fat, low-carbohydrate diets in the management of a variety of conditions, including migraines, depression, diabetes, and neurodegenerative disorders like Alzheimer’s disease. Perhaps most interestingly, the ketogenic diet when combined with caloric restriction appears to generate significant benefits beyond those of either diet alone. Research conducted at the University of Southern California’s Longevity Institute has demonstrated that it is possible to mimic the beneficial cellular effects of fasting using specific ratios of lower protein, low carbohydrates and sugars, and high fats, dramatically impacting human health and longevity.

Before exploring the potential of these newer developments, it is important to first understand a bit more about ketogenic diets, how they work and why they may provide therapeutic benefit.

So what exactly is ketogenesis? Simply put, it is the creation of ketone bodies during the breakdown of fatty acids. During times of fasting (such as when we are sleeping and between meals), long-chain fatty acids are released from adipose tissue, beginning the process of ketogenesis and the formation of ATP. Historically, the majority of dietitians have only encountered ketogenesis when their patients experience hypoglycemia, ketoadidosis or extended periods of starvation. This process is important to understand not only for everyday energy needs, but also when patients fast (for personal or medical reasons). As more and more people are electing to adopt this diet on their own for weight loss, nutritional improvement, or other individual reasons, professionals need to be aware of the potential benefits, disadvantages, side effects and risks associated with the ketogenic diet.

Nearly 35% of a person’s stored energy is in the form of triacylglycerol maintained in the adipose tissue. During periods of even brief fasting, a decrease in insulin and release of glucagon begins the process of lipolysis, wherein free fatty acids (FA) will be released and be transported in the blood stream with albumin. These fatty acids eventually land in the liver where they are rapidly oxidized to form Acetyl-CoA. Acetyl-CoA helps to make the ketone bodies: acetone, acetoacacetate and β-hydroxybutyrate. During a fast lasting longer than 3 days, protein sparing occurs and this process becomes even more important, as it will feed the heart, liver, skeletal muscles, and even the brain, intestinal mucosa, adipocytes, and even the developing fetus during pregnancy.

Diet is a very important factor in this whole process. The composition of the adipose triacylglycerol will vary depending on types of fats consumed, stored and eventually broken down. Dietary fats consumed from animal and plant sources will be used along with the excess glucose consumed. The digestion of fats is a more complex process than that of carbohydrates or proteins. Fats need to be emulsified, synthesized and converted, and involve the small intestines, intestinal epithelial cells, the liver, gallbladder, and pancreas. They are then combined with cholesterol, phospholipids, and proteins. Each of these steps could themselves be affected by diet, creating more variation. Furthermore, the overall nutritional state of the body, with particular attention given to the amount of fat and protein stores, will ultimately determine the efficiency of the process.

Ketogenesis will occur differently depending on an individual’s diet and lifestyle, nutritional status, biochemistry and pre-existing condition(s). For example, patient A consumes a very typical American diet, has type 1 diabetes (DM), obesity grade II, is a heavy smoker, and drinks several alcoholic beverages per day. Patient B is athletic, eats a vegan diet and has no medical conditions. Each patient will prompt different nutritional concerns and questions if adopting a ketogenic diet. For example, is patient A deficient in vitamin C, which is necessary in the transportation of long-chain fatty acids? This patient runs the risk of developing metabolic acidosis that could result in coma or death. If this patient also has secondary cirrhosis, the rate of ketone production will be increased in the fasting state. Is patient B, the vegan athlete, supplementing with Lysine, also necessary in the transportation of long-chain fatty acids? How sufficient are fat stores in this patient? An understanding of the ketogenic process along with a thorough intake of a patient’s diet and history will help dietitians assess any potential therapeutic applications of a ketogenic diet for each individual.

What is fasting, and why is it important?

In the distant past, food was scarce. Our ancestors were dependent on the hunt and the harvest. Frequently they endured periods of starving between bursts of fasting. These patterns forced strong evolutionary pressures on the body’s ability to survive during periods of hunger or fasting. Humans developed the remarkable ability to conserve energy when food was scarce by down-regulating cellular growth pathways through tight control of insulin-like growth factor-1 (IGF-1), target of rapamycin (TOR), and protein kinase A (PKA). Fasting-induced reductions in IGF-1, TOR and PKA lead to increased cellular maintenance and protection. The benefits of activation of these cellular activities include increased resistance to stress, removal and replacement of damaged or malfunctioning cells, and reduction of oxidative damage and inflammation. In other words, the severe caloric restriction of fasting challenges the body, which reacts to ensure its survival by activating...
these stress-response pathways. Conversely, feasting activates the IGF-1, TOR, and PKA pathways, which are critical for promoting aging in both model laboratory organisms and humans. Activation of these nutrient-sensing pathways in the presence of standard diets accelerates many of the deleterious aspects of the aging process. In fact, research has demonstrated that low levels of IGF-1 are associated with the longest-living human populations (centenarians).

These pathways are also associated with disease. IGF-1 is a pro-growth hormone that stimulates cell growth and proliferation pathways, and activation of this pathway has been associated with cancer and diabetes. The Laron population of southern Ecuador has a mutation known as the E180 mutation in the growth hormone receptor gene, which produces the molecule that receives the body’s growth signals, leading to very low levels of expressed IGF-1. Interestingly, within the Laron group there have been no recorded cases of diabetes, and only a single, non-lethal malignancy. This gene is in the same insulin–IGF-1 pathway studied in both yeast and worms. A population of mice bred with a mutation in the growth hormone pathway resulted in a 40% increase in lifespan relative to normal mice. Together with the study of the Laron population, this evidence suggests that reduced IGF-1 levels result in lower incidence of cancer, improved stress resistance, reduced TOR signaling, and reduced insulin levels with increased insulin sensitivity—essentially the opposite of metabolic syndrome. Thus, by reducing these pathways, fasting may promote resilience and offer protection from aging and disease.

Much of the research that characterized these nutrient-sensing pathways was conducted at the Longevity Institute of the Leonard Davis School of Gerontology at the University of Southern California (USC). The research focuses on demonstrating the conservation of the fundamental mechanisms of aging, in simple organisms like yeast and worms, as well as more complex organisms like mice and humans.

Another evolutionarily-conserved consequence of fasting is the seemingly-paradoxical increase in activity levels. The body’s natural response to hunger is to seek nourishment, which translates to increased foraging activities. Fasting, therefore, is actually accompanied by an increase in activity and energy. This, coupled with protection from disease and the deleterious effects of aging, can make fasting appear to be somewhat of a “miracle drug.” However, fasting is not without its challenges.

**Fasting Mimicking**

Dietitians who have worked with patients attempting or practicing fasting are familiar with the difficulties it presents—fasting is challenging! In addition to hunger, fasting diets lack adequate essential amino acids and macronutrients. Fasting also increases general catabolism, breaking down muscle and neuronal tissue in addition to fat. Research into nutrient-sensing pathways demonstrates that it is possible to provide nutrition to the body through alternate pathways that do not activate IGF-1, TOR, and PKA. In other words, it is possible to “sneak” food into the body without triggering deleterious cellular activity. The proper ratios of lower protein, low carbohydrates, low sugars and high fats can provide the body with adequate nutrition while providing all of the benefits of fasting, essentially “mimicking” fasting. For example, subjects following a 5-day Fasting Mimicking and Enhancing Diet (FMED), pre-clinically and clinically demonstrated significant reduction in body weight with targeted reduction in abdominal/visceral fat (as demonstrated by DEXA scan), concomitant reduction in abdominal circumference, maintenance of lean body mass, and significant improvement of cholesterol and triglyceride levels, blood pressure, C-reactive protein, stem cells and insulin-like growth factor-1. FMEDs leverage the body’s natural ketogenic response to specific and tightly-regulated caloric restriction while applying scientifically-validated ratios of macronutrients and amino acids. Thus, ideally planned diets will maximize health benefits while minimizing the challenges associated with traditional fasting. The result is a shift in the body to a regenerative, rejuvenating mode at a cellular level. In addition to general health and wellness, and the management of metabolic syndrome, FMEDs are being developed with a focus on the treatment and prevention of a number of other diseases including cancer, diabetes, Alzheimer’s and multiple sclerosis.

With the demonstration of the success of the Atkins diet in the reduction or elimination of seizures in 60% of patients, variations of the ketogenic diet are finding widespread acceptance in the medical and research community, as well as the general populace. With renewed and burgeoning interest in the exploration of nutrition as a disease modifier, a thorough understanding of ketogenesis is more important than ever.

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**Dietitians in Integrative and Functional Medicine**

A dietetic practice group of the Academy of Nutrition and Dietetics
An Integrative Approach to Nausea

Rupa Mukherjee, MD

Rupa Mukherjee, MD, a gastroenterology specialist, has appointments at Harvard Medical School and Beth Israel Deaconess Medical Center. She received her MD from Johns Hopkins, completed her residency at Yale, and finished her GI training at Columbia and Harvard. In her own time outside of work, she is the Chair of the Scientific Advisory Board of Real Food Solutions and maker of the Anchor Nutrition Bar (anchornutri.com), a whole-food solution to nausea.

Message from the author: As a practicing gastroenterologist (GI) at Beth Israel in Boston and teacher of medical residents and GI fellows at Harvard, my work’s focus is on gut health and ways to improve it. I treat many patients with celiac disease and gluten-sensitivity, so a particular area of interest of mine is the gluten-free diet. In the current era of various diet modifications, gluten-free, low Fermentable Oligo-Di-Monosaccharides and Polyols (FODMAPs) and pre/probiotics, I am frequently asked about the role of diet in health. One of the most common GI conditions I see on a daily basis is nausea. My patients suffer from a variety of causes, and I am often asked about the causes, physiology, and solutions. Here I share some of them with you and briefly outline the role of functional foods in GI illness.

While the exact numbers are not known, it is likely that tens of millions of people suffer from nausea. Common causes include acid reflux, stomach ulcers, gallstone disease, disorders of intestinal motility such as gastroparesis, migraine headaches, gastroenteritis, side-effects from common classes of medications, morning sickness in pregnant women, and motion sickness from cars, boats and airplanes. In fact, motion sickness is one of the most common causes of nausea, affecting up to 70% of people who suffer from nausea. In addition to nausea, key symptoms of motion sickness include dizziness, fatigue, cold sweats and sometimes pain. This condition can be quite debilitating and significantly affect quality of life. In addition to identifiable precipitants or causes, nausea can be functional or idiopathic. In other words, symptoms are present without an identifiable cause.

Studies on patients with motion sickness have shed some light on the physiologic interactions that can cause nausea. The human body has a complex system of sensing balance that involves various organs, including the eyes for vision, the skin and muscles, and the inner ear or vestibular system. Nausea often results when there is conflict between the sensory and vision systems, leading to signals sent to the brain that result in nausea. Research has also shown that during periods of nausea, the stomach’s innate rhythm increases from 3 cycles per minute to 4-10 cycles per minute. This increased stomach cycling, called tachygastria, leads to nausea and perpetuates feelings of motion sickness. In fact, any alteration to the stomach’s baseline rate, including slowed cycling, or bradygastric, can lead to nausea and motion sickness.

Management of nausea is based initially on a careful and thorough history and physical examination in order to identify causes that can be avoided, managed or mitigated for symptom relief. There can also be a strong role for diet and behavioral changes. For example, if nausea is due to heartburn suggestive of gastroesophageal reflux disease, a patient will need to understand that he or she should avoid high acid foods and follow certain behavioral modifications such as allowing plenty of time between meals, elevating the head of the bed and/or not lying down shortly after a meal. Although these are common recommendations, each patient is unique. Conversations about these behaviors can often reveal important clues about the root cause of the symptoms. Other times, however, a precipitant is not readily identifiable and/or diet and behavioral changes are not effective. In these cases, medications to manage and treat nausea or the underlying cause are indicated.

Medications to treat nausea usually fall into the category of anti-emetics or pro-kinetics. Commonly prescribed anti-emetics include odansetron and prochlorperazine. Medications with pro-kinetic properties such as metoclopramide and the antibiotic erythromycin are also used, but with limited efficacy. Serotonin antagonists like odansetron form the cornerstone of therapy in chemotherapy-induced nausea. Often, functional chronic nausea does not respond to traditional anti-emetic therapy. In these situations, anti-depressants such as the tri-cyclics (amitriptyline) have been used to some good effect. Gastric electrical stimulation has been proposed in a select group of patients with gastroparesis with nausea refractory to medications. In addition, surgery can be an option in patients with post-surgical, diabetic and/or idiopathic gastroparesis with resultant nausea. Typical management of nausea stemming from motion sickness includes natural solutions, over-the-counter and prescription strength medications, such as a patch.

Generally, these medications have a role in the treatment of nausea, but the side effects can be limiting. Possible side effects include sedation, drowsiness, extrapyramidal side effects (motor restlessness with an urge to move and inability to sit...
still called akathisia, secondary Parkinsonism, involuntary contractions of major muscle groups called dystonias), low blood pressure, and worsening of acute angle glaucoma. As a result, medications are often used with caution or, in some cases, contraindicated in elderly patients.

Given the drawbacks of the pharmaceuticals, functional foods and nutraceuticals are an intriguing option. There is active research on functional foods and gut health, specifically, how the human gut microbiota affects health. One of the most fascinating research projects is being conducted by the American Gastroenterological Association (AGA). This multicenter prospective project called the American Gut Project is being supported by the NIH and private foundations that have invested hundreds of millions of dollars to better define and characterize the human microbiome in an effort to understand its influence on human health in a positive manner. Bacteria in the gut play many roles including degradation of certain food components and mucins, production of digestive enzymes that breakdown nondigestible polysaccharides into short chain fatty acids (SCFA) (that are in turn used as an energy source and nutrients by host cells), prevention and colonization of pathogenic microbes and interaction with the immune system to respond only to pathogens and provide defense against illness. The gut microbiota is unique for each individual.

In reviewing the research, various questions arise about human microbe–food interactions. For example, how do microbiota respond to different dietary loads? What is the effect of a high fat diet and the role of SCFA in gut health? What is the end result of competition between host microbiota and pathogens for host food constituents such as sugar and amino acids, and how does this affect health? Research has shed light on some of these questions, and the findings are intriguing. For example, breast milk contains components described as “active” or beneficial towards the microbiota, and this has implications for early colonization of the gut and long-term health. It has also been shown that a diet high in fats can alter the composition of the microbiota and stimulate production of endotoxins that negatively affect GI health.

Research has also shown that fructo-oligosaccharides can possibly stimulate bifidobacteria, one of the main bacterial constituents of the GI tract that are beneficial for GI health. Beyond the GI tract, recent studies have proposed that bioactive compounds in functional foods, such as whole grains and broccoli, have a beneficial effect in the management of type 2 diabetes mellitus and prevention of long-term complications.

With regards to nausea, some studies have raised the question of whether dysbiosis in the esophagus and stomach can predispose one to reflux-related disorders, thereby leading to nausea and other conditions such as Barrett’s esophagus and esophageal adenocarcinoma. These and other findings highlight the importance of diet in gut health in addition to medication options when developing a treatment plan. In terms of functional foods used to manage nausea and motion sickness, ginger is a potent anti-emetic used with great success. Ginger teas can be particularly beneficial for promoting gastrointestinal well-being. Another functional food, peppermint oil, has a role in managing GI health. Peppermint oil acts as a natural smooth muscle relaxant in the GI tract. In this manner, it is often used as an antispasmodic in patients suffering from irritable bowel syndrome (IBS). Other functional foods falling within the low FODMAPs category have also been successfully used to manage symptoms in patients with IBS. Hopefully, initiatives like the American Gut Project will lead to more specific approaches for maximizing the potential of functional foods in the management of health.

Take Home Message

It is understandable that individuals often seek out natural, food-based approaches to manage various GI conditions, such as nausea, that might have a functional underpinning. The food-based approach is often preferable for a number of reasons. A non-drug, diet-based approach reduces concerns for drug toxicity and the potential for drug interactions, especially with polypharmacy. Moreover, individuals often do not want to feel reliant or dependent on a drug. In addition, there is greater individual control with an over-the-counter, natural solution as opposed to a pharmaceutical that requires a prescription from a doctor. Despite the benefits of a natural, food-based approach to managing nausea, often times an integrative approach incorporating both medication and diet alterations may be more effective.

Fun Facts!

Marketers didn’t like the name Chinese Gooseberry so they renamed the fruit “kiwi” after a bird that it resembles.


Food as Medicine

Ginger (Zingiber officinale, Zingiberaceae)

History and Traditional Use

Range and Habitat
Ginger (Zingiber officinale) is a tropical perennial herb native to Southeast Asia and widely cultivated in China, India, Nigeria, Australia, Jamaica, and Haiti. Its subterranean stem, known as a rhizome, is the edible and medicinal portion of the plant. Ginger root is characterized by its knotted, beige exterior and its yellow interior. It features thick, protruding, reed-like stems and lanceolate leaves arranged in two vertical columns on opposite sides of the stem. Seasonally unfurling from ginger’s leaves are dense, ovoid-shaped flower structures that produce yellow-green flowers with a deep purple, yellow-marked lip. Ginger plants can have an indefinite spread in tropical climates, though it is susceptible to pests and disease. The flavor of ginger is described as a sweet, peppery taste, accompanied by a spicy aroma due to the presence of gingerols and ketones.

Phytochemicals and Constituents
Several analytical processes have successfully identified 115 components in a variety of dried and fresh ginger types. The most important phenolic elements of the ginger root are gingerols and their ginger-related composites—paradol, zingerone, and shogaols. Gingerols are the most abundant constituents of fresh ginger; the three other phenolic compounds are not as plentiful. When gingerols are cooked or dried, they transform into their respective compounds. These bioactive compounds have beneficial antioxidant, anti-inflammatory, and anticarcinogenic properties. Research suggests that the optimal dosage of ginger ranges from 250 mg to 4.8 g/day using fresh or dried rhizomes. Other dosages for ginger intake vary depending on the form in which they are consumed and the purpose for which they are intended.

Historical and Commercial Uses
Ginger was used traditionally as a flavoring agent in food and beverage preparations prior to its use in India in traditional Ayurvedic medicinal practices. Historically, it was regarded as the mahaoushadha (the great medicine) among ancient Indians. Fresh and dried ginger is used commonly in Ayurvedic medicine for the treatment of ailments such as indigestion, fever, and digestive disorders. It is suggested that fresh ginger assists in the relief of nausea and vomiting due to the presence of shogaol, and dried ginger alleviates chronic respiratory conditions. In addition, gingerol, the most predominate pungent bioactive compound of ginger, has been reported to stimulate digestive enzymes to help improve digestion issues.

In Traditional Chinese Medicine, fresh ginger root (sheng jiang) is considered warm and pungent, and is recognized for dispersing cold within the stomach, as well as contributing to the treatment of nausea and vomiting. It also is acknowledged as an expeller of exterior cold, quelling inflammation of the stomach and infections related to the cold and flu. Dry ginger (gan jiang) is considered to be more hot and pungent than fresh ginger and responsible for dispersing cold in the spleen region, thereby alleviating such ailments such as diarrhea and poor appetite. Quick-fried ginger (pao jiang) is considered warm and bitter, which is purported to help treat symptoms associated with conditions such as dysmenorrhea and diarrhea. Asian cooking features ginger in a number of dishes for flavoring, including soups, curries, rice dishes, stir-fries, and sauces.

It is believed that both the Chinese and Indians have used ginger root for medicinal purposes for more than 5,000 years; however, the origin is unknown. Ginger was a popular trading commodity, highly prized for its medicinal properties, exported to the Roman Empire more than 2,000 years ago from India. Queen Elizabeth I of England is credited with the creation of the gingerbread man, which evolved into a popular treat consumed during the Christmas holidays. Ginger is used commercially in a variety of forms, including, but not limited to, fresh, dried, and candied. The age of the ginger plant determines its culinary and medicinal use. Young ginger root harvested at five months has not matured and typically has a mild flavor, suitable to be used fresh. At nine months, ginger characteristically has a thick skin and pungent root, from which the volatile oils can be extracted. It also is used in a dried or ground form as a spice and in commercial baking products. Further, ginger is added as a flavoring to a number of different beverages such as ginger ale, ginger beer, and ginger wine.

Modern Research
A considerable amount of research demonstrates and supports the significant health benefits of ginger. The majority of evidence regarding ginger’s health benefits is associated with nausea in relation to pregnancy or as an effect of chemotherapy. Three clinical studies explored the effects of ginger in the reduction of chemotherapy-induced nausea in young adults and children. The results from these studies indicated that ginger is effective in decreasing chemotherapy-induced nausea and vomiting. More specifically, one trial indicated that supplementing with ginger...
(in the amount of 0.5 g-1.0 g of liquid ginger root extract) reduces nausea. In a separate study, researchers observed reductions in the prevalence of nausea in patients with breast cancer when 1.5 g of powdered dried ginger root was added to an antiemetic therapy following chemotherapy.

Another clinical study observed the effects of powdered ginger in patients with intra and postoperative nausea accompanying Cesarean sections. The results indicated that episodes of intraoperative nausea were reduced when ginger was administered orally. However, ginger did not have a decreasing effect on the overall incidence of intraoperative nausea and vomiting during a Cesarean section.

Ginger also has been explored as a possible treatment for other gastrointestinal issues such as dyspepsia, gastric emptying, and irritable bowel syndrome (IBS). The authors of one clinical study tested the effects of ginger on functional dyspepsia and gastric motility. The results indicated that ginger increased gastric emptying more rapidly than the placebo; however, ginger did not influence any gastrointestinal symptoms. Another related randomized, double-blind clinical study explored ginger and its effects on delayed gastric emptying. The results indicated that ginger may reduce delayed gastric emptying. Researchers of an additional gastrointestinal clinical trial examined ginger’s effects on IBS for a duration of 28 days. The results indicated that the group taking 1 g of ginger had a 26.4% reduction in symptoms. Researchers in two separate clinical studies explored ginger’s mitigating impact on dysmenorrhea. The first study was conducted for a period of three days based on reports of pain experienced during the first two days of menstruation each month. The results suggested that ginger had more of an impact on dysmenorrhea symptoms compared to muscle-relaxation exercises. A similar clinical study found that at the end of the study period, 82.85% of the participants in the experimental group reported that their symptoms had improved compared to 47.05% of the participants in the placebo group.

Three additional clinical studies examined the effects of ginger in the treatment of colorectal cancer. The bioactive compounds of ginger contain antioxidant, anti-inflammatory, and anticarcinogenic properties, which can interfere with pathways responsible for cancer development. The results of all three studies demonstrated that an intake of 2 g of ginger root was able to reduce proliferation in the colorectal epithelium. In addition, one trial illustrated that ginger simultaneously increased apoptosis (normal, programmed cell death) and differentiation. Ginger also exhibited an anti-inflammatory effect in individuals of normal risk and lowered COX-1 in individuals at higher risk.

Other clinical studies have explored the effects of ginger in relation to muscle pain, respiratory distress syndrome, chronic lower-back pain, satiety, migraines, osteoarthritis, and type 2 diabetes.

### Micronutrient Profile

**Micronutrient Profile:**

(Per 1 tablespoon [6 g] raw ginger)

- Magnesium: 3 mg (0.75% DV)
- Potassium: 25 mg (0.7% DV)
- Vitamin B6: 0.01 mg (0.5% DV)
- Vitamin C: 0.3 mg (0.5% DV)
- Dietary Fiber: 0.1 g (0.4% DV)
- Folate: 1 mcg (0.25% DV)
- Niacin: 0.05 mg (0.25% DV)
- Pantothenic acid: 0.25 mg (5% DV)
- Phosphorus: 2 mg (0.2% DV)
- Calcium: 1 mg (0.1% DV)

**DV = Daily Value as established by the US Food and Drug Administration, based on a 2,000 calorie diet.**

### Recipe: Candied Ginger

**Ingredients:**
- 1 cup fresh ginger root
- 3 cups water
- 3 cups granulated sugar, plus additional for coating

**Directions:**

1. Spray a cooling rack with nonstick spray and set it in a sheet pan lined with wax paper.
2. Peel and thinly slice the ginger root.
3. Bring sugar and water to a boil in a saucepan. When the sugar is dissolved, add the ginger and simmer for 30-45 minutes, until ginger is tender.
4. Drain the ginger and reserve the liquid for another use. (The reserved liquid can be further reduced to make ginger syrup or added to drinks.) Spread the ginger on the cooling rack in a single layer and dry for 30 minutes.
5. Once dry, toss ginger slices with additional sugar to coat. Store in an airtight container.

The basic materials for this article were compiled by dietetic interns from Texas State University in San Marcos, Texas, and the University of Texas at Austin through the Dietetic Internship Program at the American Botanical Council (ABC), led by Jenny Perez, ABC Education Coordinator. We thank Kelly Hill (TSU, 2014) for her research and work on ginger. Reprinted with permission from DIFM Networking partner, the American Botanical Council. Bauman H. Food As Medicine: Ginger (Zingiber officinale, Zingiberaceae) HerbalEgram. http://cms.herbalgram.org/herb/volume12/03March/March2015_FaM_Ginger.html. Published March 2015. Accessed June 26, 2016.

### Nutrient Profile

**Macronutrient Profile:**

(Per 1 tablespoon [6 g] raw ginger)

- 5 calories
- 0.11 g protein
- 1.07 g carbohydrate
- 0.04 g fat
Food as Medicine References


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Making Strides in Nutrition Policy and Advocacy as we approach the Academy’s 100th birthday!

The time is NOW! The 100th year anniversary of the Academy of Nutrition and Dietetics approaches in 2017. As we have made enormous strides in these past 100 years, we again have the opportunity to set the framework for how this upcoming century of nutrition policy and professionalism will unfold. With awareness, collaboration, and action, your ideals and aspirations for our field can be realized.

A message from Olivia Wagner MS, RDN, LDN DIFM Policy Advocacy leader

It is highly possible that storms the hill, attending press conferences, speaking to our legislators, or remembering the verbiage of the latest bills in need of committee support might not be your favorite thing. However, it benefits our profession and those that we serve to not remain silent. Policy efforts like these made by our colleagues and those at the Academy level profoundly impact our role as nutrition professionals and need our attention.

Nutrition advocacy not only determines how we currently practice and how we are reimbursed, but it provides an opportunity to define our scope of practice and positively transform the collective perception of the dietetic profession. All in all it helps us better serve those whom we strive to support in living healthier lives.

By taking a few moments to respond to an Action Alert, you are allowing your voice to join the thousands of others who respect our profession and believe in our ability to change the health of millions within our nation and even on a global level. Yes, some of these issues may appear incidental or unrelated to your area of practice, but with each step forward we are strengthening our voice and solidifying our ground as America’s Nutrition Experts.

My DIFM “ask” for 2016 is to stand up for Registered Dietitian Nutritionists as the nutrition expert and support our profession. Please start by responding to our Academy Action Alerts, make a phone call, send a letter, get involved. Let’s move into the next century loud and proud to be Registered Dietitian Nutritionists!

Please direct additional questions to Olivia Wagner at oliviawagner28@gmail.com.

Thank you,
Olivia

Olivia Wagner, MS, RDN, LDN DIFM Public Advocacy Leader

A message from Monique Richard, MS, RDN, LDN DIFM Immediate Past Chair and current Second Century Liaison

Happy Summer DIFM Members!
I’d like to take a moment to let you know that I am honored to be representing DIFM as the 2nd Century Liaison. As we celebrate 100 years in 2017 we also look to the future and see all the opportunity and positive enhancements we can continue to make in our practice area and in the lives of all those we serve. Please read more about the Academy’s vision and intention at http://www.eatrightfoundation.org/secondcentury/. I will continually be communicating both to you, our members, and to the Academy on behalf of DIFM, regarding these goals and strategies and I would love to hear your thoughts and feedback. Your voice matters and my virtual door is always open.

As the Academy of Nutrition and Dietetics embarks on its 100th anniversary in 2017, the organization is taking this moment to chart a new vision for the future—a Second Century built with an extraordinary commitment to collaboration, a focus on service and an emphasis on accelerating the progress toward solving the greatest food and nutrition challenges of our time. Thus, creating a world where people and communities flourish because of the transformational power of food and nutrition. It is the goal of the Academy to not only keep members informed over the next three years as the Second Century initiative continues, but to [be] part of shaping our future. The Academy is asking members to get involved throughout this process—provide feedback through surveys and key discussions at member meetings, stay engaged and help to create this new vision for the Academy.

Now, as the Academy is kicking off the Second Century initiative, is the perfect opportunity to learn more about the Academy’s history and the history of the profession through past Journal of the Academy of Nutrition Dietetics articles including “History Snapshot: Dietetics Student Experience in the 1940s” or Academy publications Carry the Flame and the The First Fifty. Also, be on the lookout for upcoming meetings or webinars to learn more about the Second Century initiative.

I encourage you to carry the notion that with action, unification, and optimism for these next 100 years, we can collaboratively enhance our profession and elevate our reputation as America’s Nutrition Experts.

Cheers to 2017 and a century of growth!

Please direct additional questions to Monique Richard at MoniqueRichardRDN@gmail.com or secondcentury@eatright.org.

Thank you,

Monique

Monique Richard, MS, RDN, LDN, Integrative Dietitian Nutritionist, Immediate Past Chair, Dietitians in Integrative and Functional Medicine
Upcoming Conferences and Educational Opportunities


Electronic Mail List (EML) Recent Topics Review:
Several EML users recommend Sue Allen’s Next Level Functional Nutrition Programs, an integrative nutrition certificate program; more information on this program can be found at: http://nextlevelfunctionalnutrition.com/. Trusted supplement companies that were suggested for general use for patients include Designs for Health, Thorne, Integrative Therapeutics, Pure Encapsulations, and Douglas Labs. ONE by Pure Encapsulations was recommended as the best overall multivitamin and mineral supplement for the money, which can be found at: www.pureencapsulations.com/o-n-e-multivitamin.html. Magnesium, omega-3’s, Methylated B and B-complex vitamins, and Neuroscience’s Kavinace supplement were top suggestions for treatment of anxiety. Other popular topics include carrageenan, treating osteoporosis, and the ketogenic diet. Join the EML here: https://groups.yahoo.com/neo/groups/DIFM_Listserv/info.

Reviews, Resources & Research

Gluten and folate intake in childbearing-aged women. Students from the University of Georgia’s 2015 Center for Undergraduate Research Opportunities summer fellowship conducted a study of the impact of gluten-containing foods on folate intake of women of childbearing age. Due to the increasing popularity of gluten-free diets and decreased intake of folate-enriched cereal grain products, folic acid status of women of childbearing age (18-19 years) and pregnant women was assessed. The participants included women of childbearing age from the University of Georgia’s Fighting Osteoporosis in College Using Soy (FOCUS) intervention and pregnant women from the Folic Acid Supplementation Study in Pregnant Women (FAP) study. Dietary recall information was collected from participants in both studies; recalls from participants in the FAP study were taken at weeks 24 and 36 gestation. The data was analyzed to compare the nutrient intake before exclusion of gluten-containing foods and re-analyzed after exclusion. Significant differences between folate, folic acid, and food folate were observed in participants from both studies after exclusion. Before the gluten food exclusion, 16.7% of individuals from the FOCUS study and 33.3% of participants from the FAP study met the RDA for total folate. Only 6.7% (two participants) from the FOCUS study met the RDA for total folate after exclusion of gluten-containing foods. After exclusion of gluten-containing foods, a significant decrease in nutrient intake from the FOCUS study was observed; mean intake of total folate decreased by 24.3%, folic acid by 31.1%, and food folate by 10.5%. Similarly, decreases in nutrient intake in the FAP study occurred; there was a 57.3% decrease in total folate, 84.0% in folic acid, and 20.4% decrease in food folate. Declines in other micronutrients were also observed after exclusion of gluten-containing foods. Prior to exclusion, 33.3% of participants in the FOCUS study met the RDA for calcium and 16.7% met the RDA of iron. After exclusion of gluten foods, 23.3% of participants met the RDA of calcium and 10.0% met the RDA of iron. There was also a significant decrease in caloric intake after the exclusion of gluten-containing foods.

Participants in the FOCUS study had a decrease of 13.1% in caloric intake and participants of the FAP study showed a decrease of 30.6%. After adjusting for caloric intake in the FAP study, exclusion of gluten-containing foods did not affect total folate. However, the nutrient density of fiber, calcium, and iron all increased, showing that folate intake is more negatively affected by the exclusion of foods containing gluten than other micronutrients. Within both the FOCUS and the FAP study, excluding gluten-containing foods led to a reduction in micronutrient intake such as calcium, fiber, and iron and significant differences in folate intake.


Essential oils (EOs) to extend shelf life of foods. In an attempt to increase the use of natural additives in foods, EOs derived from plants are being used more widely in the food industry as an alternative to the more commonly

...
used synthetic preservatives. By incorporating EOs in the packaging materials of foods, they can improve the water vapor barrier property of such materials due to the complex mixture of natural polar and nonpolar compounds in EOs. Many EOs provide antioxidant and antimicrobial properties through their numerous bioactive compounds. There are a variety of methods used to extract EOs from plants, which are a primary factor in determining the quality of the EO. These methods include distillation, solvent extraction, and the solvent-free microwave method. The extraction method, chemical composition, and plant source all contribute to the antibacterial and antioxidant activities of the EO. The antimicrobial properties of EOs protect foods from spoilage and pathogenic microorganisms. Carvacrol, for example, is a chemical component of many EOs which is known to expend distinct antimicrobial actions by disrupting the integrity of bacterial membranes. EOs tend to have higher antibacterial activity on gram-positive bacteria than gram-negative bacteria, likely due to the complexity of their double-layer cell membrane. Many compounds in EOs have structures similar to plant phenols, contributing to their antioxidant properties. EOs act as antioxidants by preventing chain initiation, hydrogen abstraction, and free radical formation, and bind transition metal ion catalysts. These antioxidative properties can prevent lipid oxidation and spoilage of foods. Currently there is an increased interest in using antimicrobial packaging to increase shelf life of foods and products. However, the application of EOs in packaging certain foods may be limited as their volatile aromatic compounds could negatively alter a food’s taste and smell. Protein-based biomaterials have also been added to packaging as an approach to improve packaging properties and add nutritive value. However, an issue with using protein-based materials is that it has poor barrier properties against water vapor. Therefore, in order to improve the protein film, the polymer network must be modified with chemical and enzyme treatments. When packaging is incorporated with EOs, however, foods may be protected from spoilage and pathogenic microorganisms. Additionally, due to their antioxidant and antimicrobial activities, EOs can operate as active packaging. The amount of extract added is directly correlated to the antioxidant power of the material. Plant EOs can serve as an alternative natural food additive and effectively extend the shelf life of foods. New technology is advancing that may reduce their distinct smell, potentially decreasing the hesitation of food organizations from using EOs as an alternative. Tongnuanchan P, Benjakul S. Essential Oils: Extraction, Bioactivities, and Their Uses for Food Preservation. *J Food Sci*. 2014;79(7):R1231-1249. doi:10.1111/1750-3841.12492.

**Preventing Food Allergies Early:** The Center for Disease Control and Prevention reported that from 1997 to 2011, children with food allergies increased about 50% in the US. As the numbers of food allergies in children have been rising, avoidance of common food allergens seemed like the best option to prevent development of such allergies in young children. However, recent studies are suggesting just the opposite. The 2011 Learning Early About Peanut Allergy (LEAP) study led by Professor of Paediatric Allergy Gideon Lack was the first randomized trial to evaluate if early peanut exposure would prevent food allergies from developing in infants at high risk for peanut allergy. The study found that the infants who are exposed to peanuts within their first 11 months of life are at a significantly decreased risk of developing peanut allergies by the age of five years. Lack continued his research further in the Enquiring about Tolerance (EAT) trial in order to see if early introduction of common allergy foods to 1300 breast-fed infants would have a similar outcome. Participants were divided into two groups: the early introduction group at three months of age, and the later introduction group at six months of age. The foods introduced included peanuts, eggs, whitefish, wheat, cow’s milk, and sesame. After analysis, there was no significant reduction in allergy for early introduction. However, out of the 34% of families who fully adhered to the diet protocol, 100% saw a reduction against peanut allergy and 75% against eggs; there was no significant protection rate against the other four common food allergens. A setback of the study was that approximately two-thirds of participants were unable to follow the proper diet regimen, which led to a small reduction rate of allergens in the infants; it is probable that similar results would be seen if this became general protocol. Overall, achievement is feasible through early introduction of allergenic foods before six months of age and has no effect on breastfeeding when fully complying to protocol. Perkin MR, Logan K, Marrs T, et al. Enquiring about tolerance (EAT) study: Feasibility of an early allergic food introduction regimen. *J Allergy Clin Immunol*. 2015;135(5):1447-1486. doi:10.1016/j.jaci.2015.12.1322. Du Toit G, Roberts G, Sayre P, et al. Identifying infants at high risk of peanut allergy: The Learning Early About Peanut Allergy (LEAP) screening study. *J Allergy Clin Immunol*. 2013;131(1):135-142.
Magnesium Reduces Migraine Frequency and Intensity: The effect of oral and intravenous (IV) magnesium on migraine frequency and intensity was examined in a meta-analysis of 21 randomized controlled trials. Thirteen studies (948 participants in total) examined the effect of IV magnesium on migraine attacks and eleven studies (789 participants in total) investigated oral magnesium’s effect on migraine prevention. Six of the studies investigating IV magnesium and five of the studies with oral magnesium used combination therapy: IV or oral magnesium plus another agent, such as IV adenosine disodium triphosphate and ozoagrel or oral ergotamine tartrate, L-carnitine and riboflavin. Various forms of magnesium were used in both types of interventions: IV studies used magnesium chloride, -sulphate, -citrate, or -aspartate and oral magnesium studies used magnesium 2-propylvalerate, -oxide, -sulphate, -citrate, potassium magnesium or trisMagnesium was found to significantly reduce migraine frequency and oral magnesium should be considered as a complementary treatment for migraine attacks and oral magnesium should be considered for migraine prevention. Chiu HY, Yeh TH, Huang YC, Chen PY. Effects of Intravenous and Oral Magnesium on Reducing Migraine: A Meta-analysis of Randomized Controlled Trials. Pain Physician. 2016;19(1):E97-E112. http://www.painphysicianjournal.com/current/pdf?article=MJQ4N-w%3D%3D&journal=93. Accessed June 19, 2016.


Future perspectives of personalized weight loss interventions based on nutrigenetic, epigenetic, and metagenomic data. J Nutr. 2016 Mar 9. pii: jn218354. [Epub ahead of print] (PubMed ID: 26962191) About 70 variants in or near genes with potential relevance to body weight maintenance have been identified. More recently, the influence of epigenetics that can modify weight-relevant gene expression have also been studied. Because intestinal microbiota can also affect body weight, the integration of nutrigenetics, epigenetics and metagenomics can result in more effective personalized approaches to weight loss.


Dietary components as epigenetic-regulating agents against cancer. Biomedicine (Taipei). 2016 Mar;6(1):2. doi:10.7603/s40681-016-0002-8. Epub 2016 Feb 10. (PubMed ID: 26872811) This review discusses recent findings concerning epigenetic involvement with cancer. Table 1 lists various dietary items and the epigenetic mechanisms by which they can exert their chemopreventive properties. Examples with discussion include EGCG from green tea, curcumin from turmeric, resveratrol, flavonoids and isothiocyanates.

A common variant in the SETD7 gene predicts serum lycopene concentrations. Nutrients. 2016 Feb 6;8(2). pii: E82. doi:10.3390/nu8020082. (PubMed ID: 26861389) A significant association was found between the rs7680948 variant of the SETD7 gene and serum levels of the carotenoid lycopene, with potential significance for prostate cancer.

30. (PubMed ID: 26827955) The complexities of assessing vitamin D status in light of multiple variables, including epigenetics among others, is described. The authors suggest that the concept of a vitamin D index will be more useful than more simplistic measurements or population-based guidelines.


Anticipation of personal genomics data enhances interest and learning environment in genomics and molecular biology undergraduate courses. PLoS One. 2015;10(8):e0133486. doi:10.1371/journal.pone.0133486. eCollection 2015. (PubMed ID: 26241308) Undergraduate students who were taking a course relevant to biology and genetics reported that when offered a direct-to-consumer genetic test, anticipation of receiving the results stimulated their interest and improved their learning experience, making it more enjoyable.

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Fun Facts!

Brazil Nuts contain the highest source of selenium of any food by a wide margin.

2015-2016 DIFM Award Winners & Members Spotlight

Congratulations to the 2015-2016 DIFM Award Winners!

Lifetime Achievement - Kathie Swift, MS, RDN, LDN, FAND
Excellence in Practice - Betsy Redmond, PhD, MMSc, RDN
Excellence in Service - Robin Foroutan, MS, RDN, HHC
Outstanding student - Lisa Best, MBA, PhD, CCN

In seeking sponsors, DIFM has established product standards for products and services of value to the integrative and functional medicine field. We consider product quality, efficacy, manufacturing, and business practices among other criteria. We encourage all professionals and individuals to choose products aligned with their own specific standards.

Member Spotlight

Two DIFM members received awards at the New York State Academy of Nutrition and Dietetics 8th Annual Meeting and Expo on May 22, 2016. At the expo, Jessica Garay Redmond, MS, RD, CSCS gave a presentation on Exercise as Medicine: What RDNs Need to Know and later was recognized with the Emerging Leader in Dietetics Award from NYSAND. Susan Wyler, MPH, RDN, LDN was also recognized and received the Emerging Leader in Dietetics Award by the Durham Chapel-Hill District Dietetic Association. Congratulations to Jessica and Susan on their achievement and thank you for being such outstanding DIFM members!
Dietary Supplements: An Integrative and Functional Approach
Dietitians in Integrative and Functional Medicine DPG Symposium
Saturday, October 15, 2016
8 am-3:30 pm
Westin Boston Waterfront

The Dietitians in Integrative and Functional Medicine (DIFM) DPG will host a full day symposium at the Westin Boston Waterfront. This cutting edge event will focus on herbal and non-herbal dietary supplements in the application of specific health conditions including cardiovascular disease, metabolic syndrome, inflammation, sleep/stress, and gut health. Therapeutic application will address dosing, delivery, current research, and safety concerns. Along with research to support their usage, there will be discussion regarding functional lab testing, nutritional genomics and the nutrition focused physical exam as it pertains to supplements.

Distinguished speakers Dr. Mary Bove, ND and Dr. Sheila Dean, DSc, RD, LD, CCN, CDE will focus on herbal dietary supplements and non-herbal dietary supplements, respectively. During lunch, Dr. Corey Schuler, MS, DC, LN, CNS will present Advances in Intestinal Hyperpermeability and Small Intestinal Bacterial Overgrowth. This presentation will focus on working with those clients for whom the elimination diet has failed, have difficult symptoms to manage, and cannot tolerate conventional approaches. Application to the Commission on Dietetic Registration for six continuing education credits has been submitted for approval.

For more information or to register, go to http://integrativerd.org/ and click on the Boston 2016 tab.

Mind Body Happy Hour
DIFM’s Third Annual Member Appreciation Event at FNCE®

Mind Body Happy Hour
DIFM’s Third Annual Member Appreciation Event at FNCE®
Sunday, October 16, 2016
Renaissance Waterfront Hotel
5:30-7:30 pm

Due to popular demand, the third annual Mind Body Happy Hour will return to FNCE in Boston this year. After a bustling day of sessions and exhibits, you deserve some down time and we will be here to help you do so. Along with relaxing, you will learn about a new modality as well as tips on additional methods to use personally or with your clients. You will also have time to network with other DIFM members and our sponsors. This year’s modalities include:

Energy Medicine: Plant Communication Demonstration
Annie B. Kay, MS, RDN, RYT500

Mindful Eating
Mary Purdy, MS, RDN

Yogic Breathing and Movement
Aarti Batavia, MS, RDN, CLT, CFSP, IFMCP; Monique Richard, MS, RDN, LDN; Jessica Redmond, MS, RD, CSCS, RYT200

We are looking for FNCE® Volunteers: Can You Spare Some Time?

If you are interested in volunteering during the DPG Showcase to talk with members and prospective members and/or Mind Body Happy Hour, both on Sunday, October 16, please contact Mary Alice Gettings at difmma@gmail.com.

Session Reviewers Wanted
We have selected several FNCE® sessions to be reviewed for DIFM publications. If you are interested in writing a review article, contact Mary Alice Gettings at difmma@gmail.com and she will send you a list of the sessions available for review.

DPG SHOWCASE
Sunday, October 16, 2016
Exhibit Hall
9 am-1:30 pm
Visit us at the DPG Showcase for your DIFM ribbon and a small membership gift of appreciation.

FNCE® Events are sponsored by:
Gaia
Pure Encapsulation
Integrative Therapeutics
The Dirt Cure: Growing Healthy Kids with Food Straight from Soil

Maya Shetreat-Klein, MD

Hardcover: $26.00
ISBN: 978-1-4767-9697-0

"Food is not simply fuel nor is food mere medicine—food is an ally that promotes resilience through sacred partnership with the natural world. . . . Food—real food—is the embodiment of all the healing properties of nature: rich soil, warm sunshine, fresh air, living water, and diverse microbes."

Dr. Shetreat-Klein, a pediatric neurologist, writes as parent and physician. She offers personal examples, admits mistakes, and reveals frustration with her own children’s pediatricians. Dr. Shetreat-Klein asks difficult questions, such as ‘when do chronic illness and long medication lists became normal for children?’ She challenges parents to consider germs, bugs, weeds and dirt as friend instead of enemy, to be detectives and use intuition to determine the root cause of their children’s issues. She complains that pharmaceutical overuse for treatment of intractable seizures, autism, ADHD, and asthma may make children sicker while there is a lack of attention given to digestive symptoms like diarrhea, constipation, gas, and bloating.

Dr. Shetreat-Klein’s focus is on healing through wholesome food. She unravels in detailed explanations the need to choose food wisely. On demonizing macronutrients, she explains that labeling one food element good or bad, gluten for example, is reductionist, ignoring food’s complexity and suggests instead focusing on when food is harvested or how it is grown, processed, and prepared. Her perspective is “the whole of the plant is always greater than the sum of its parts.”

From one perspective, The Dirt Cure is disheartening. Page after page highlights how far our food supply has journeyed from healthy to unwell. Dr. Shetreat-Klein is not afraid to speak out, criticizing today’s food industry, and her words are alarming. Her science-based, physician’s perspective offers empowerment and options, but still the negatives are overwhelming. Simultaneously, though, this book inspires a call to action. The resounding message is: feed your children fresh, whole, living foods, both plants and animals, grown in fertile soil with mineral-rich water. After reading the first two sections of the book, it feels as though the odds of heeding her message are stacked high against us.

The last section of the book is devoted to the ‘hows’ of taking action, with shopping lists, recipes, and meal ideas. It is here, through the implementation of her whole food eating strategies, that the integrative RDN can be a guide and perfect partner to help navigate the current food landscape and assist with individualized meal planning. When shopping with children, the author suggests readers visit farmers’ markets primarily and do their best to avoid supermarkets. While this may be a difficult task, Dr. Shetreat-Klein believes it will connect children to the source of their food better and empower them to make healthier choices.

This book is an extensive resource, packed with ideas, tools, and well-researched reasons for clean eating. More than A Dirt Cure, it is an essential read for anyone working with children, their families or for your own family.

Reviewed by Dina Ranade, RDN, LDN, The Integrative RDN Botanicals, Supplements, and Functional Foods Column Editor. Contact Dina at dranade@comcast.net.
Brain Maker
The Power of Gut Microbes to Heal and Protect Your Brain—for Life

David Perlmutter, MD
Hardcover: $28.00

Dr. David Perlmutter, a neurologist and Fellow of the American College of Nutrition has authored six books on brain health including Grain Brain and its accompanying cookbook. In Brain Maker, he continues his testimony to the gut-brain link, this time focusing on the microbiome. The book offers a detailed description of intestinal microorganisms, their function and benefits. The importance of the microbiome’s relationship to the central nervous system is correlated to depression, anxiety, obesity, autism, and insulin resistance. Dr. Perlmutter suggests shifting focus from pharmaceutical development for neurodegenerative disease treatment to preventive strategies, especially for Alzheimer’s disease. With research study summaries and clinical examples from his practice he outlines how gut flora rehabilitation impacts brain health.

Dr. Perlmutter’s philosophy guides readers to the concept that while eradicating brain disorders is unlikely, the potential for reducing risk is substantial. He believes that mainstream treatments are lacking, but there is much promise in altering diet to support healthy gut flora.

Dr. Perlmutter names his plan Brain Maker Rehab. At its heart are essential habits to nourish and sustain a healthy microbiome. These include choosing foods rich in probiotics and prebiotics especially fermented foods, low-carb and high quality fat selection; drinking wine, coffee, tea, filtered water, and eating chocolate; and a 24-72 hour fast every season. He supports each principle with research and examples. Consistent with Grain Brain, his plan is gluten-free, low carbohydrate, and high in fibrous fruits and vegetables and quality fat.

The rehab begins with a 7-day plan to reboot the microbiome, then is maintained with the essential habits outlined above. He emphasizes incorporating fermented foods and provides extensive recipe options. Dr. Perlmutter seems to live by his recommendations and use them in his own medical practice. There is kindness and compassion in his approach as he addresses potential barriers and admits change is hard. He provides clarity on confusing topics such as choosing probiotic supplements.

Preventing deterioration and affording protection of the brain serves as a powerful motivator. Brain Maker is a quick, interesting, and informative read and has great potential to assist clients struggling with nutritional changes. There are many pearls for the functional RDN to take away, including the book’s epilogue on fecal microbial transplantation (FMT). While Dr. Perlmutter labels himself as one of the few clinicians encouraging this technique for anything but recurring C. difficile infection, he presents it as a revolutionary treatment for microbiome repair. Despite the “ick” factor, the research he sites offers a positive and uplifting perspective. This supportive theme exists throughout Brain Maker as Dr. Perlmutter communicates his goal of empowerment through food.

Reviewed by Dina Ranade, RDN, LDN, The Integrative RDN Botanicals, Supplements, and Functional Foods Column Editor. Contact Dina at dranade@comcast.net.
Summer is the beginning of the “New Year” at the Academy—and this will be a very exciting year to be a member of DIFM! I am honored to be your incoming Chair and to serve on the leadership team with some of the most dynamic and passionate integrative and functional dietitians across the country. The demand for RDNs who are knowledgeable in this practice area is growing—many state affiliates had integrative and functional topics at their state conferences and the Academy is featuring a Functional Nutrition track again this year at FNCE® in Boston. Our DIFM Spotlight Session, Diets, Supplements, and Cancer Therapy: What Should We Tell Our Patients? will take place on Monday, October 17th from 3:30-5 pm.

I want to thank Monique Richard, MS, RDN, LDN, our outgoing Chair for her vision, clarity and endless positive energy. Under her leadership and with the incredible support from our executive committee, DIFM had many accomplishments. We expanded our membership and influence in the Academy, enhanced our partnerships with like-minded organizations such as the Plant-based Prevention of Disease (PPOD), updated the website to make it more user-friendly, expanded member benefits including new awards and scholarships for conference attendance, hosted multiple webinars on integrative topics, and provided recommendations to the National Center for Complementary and Integrative Health on their five-year planning cycle.

Our dynamic leadership team has worked hard this past year and has set the stage for many exciting upcoming projects including:

• An October Symposium on Dietary Supplements in Boston
• Collaboration with the Academy for an Online Certificate of Training in Integrative and Functional Nutrition
• The #DIFM Lifestyle campaign and T-Shirts
• A Mentoring and Coaching group
• Funding a practice audit through the Dietetics Based Practice Research Network (DBPRN)
• Collaborations with our network partners to support member education and resources for practicing IFMNT
• A connecting educators initiative to help support integrative and functional curriculum in dietetics education.

As you can see, we have lofty ambitions and we need lots of passionate people who are committed to helping us reach our goals. We need you! If you would like to get involved and volunteer your time for any of our projects, please let us know by contacting our membership chair Jacqueline Santora Zimmerman, MS, RDN, at jacq.zimmerman@gmail.com.

Lastly, we are in the process of building an expert database to help us meet the demand of the numerous requests we get for writers, speakers, peer reviewers and mentors. If you have an area of expertise and are willing to be included in this database, please contact Therese Berry, MS, RDN, LD, CNSC, at tla0918@gmail.com.

This year we want to continue to expand educational opportunities, increase collaborations with networks, provide mentoring and coaching opportunities, increase DIFM member representation in National Academy committees and positions, and enhance diversity in our DPG.

I want to thank you for your membership in DIFM. Your dues support furthering our practice area and increasing our amazing benefits that we provide back to you all year long. Please visit our website www.integrativerd.org for more information on benefits. I am excited to begin this new membership year with you. I hope the warm days of summer bring a sense of energy and renewal to you and your family. In the words of our Past Chair MaryBeth Augustine, RDN, CDN, FAND, DIFM—“Onward and Upward!”

Fun Facts!

Ways to add anti-inflammatory turmeric root to your everyday cooking (its not just for curry!): add to scrambled eggs, sautéed vegetables, spaghetti sauce, roasted nuts, roasted vegetables and/or potatoes, soups, mayonnaise, and tea. Turmeric powder is easiest, but you can use the chopped or grated fresh root, too.
Editor's Notes
Sarah Harding Laidlaw, MS, RDN, CDE

Summer marks the beginning of the new membership year for the Academy and DIFM and the time to look forward to all of the exciting advancements in Integrative and Functional Medicine (IFM) that we will learn about in the coming months. As Editor of The Integrative RDN I have the privilege of working with leaders in the field, not only our Executive Committee, but also the Newsletter Team who works diligently to find authors for articles on topics that advance our knowledge.

We are changing the format to topic-specific columns so members and readers can quickly identify articles in their area of interest. Each column has an editor who will gladly correspond with you about potential articles. Those editors are: CPE Editor, Shari B. Pollack, MPH, RDN; Botanicals, Supplements and Functional Foods Editor, Dina Ranade, RDN, LD; Mind Body Editor, Doris Piccinin, MS, RD, CDE, LDN; Biochemistry/ Nutritional Genomics Editor, Danica Cowan, MS, RD; and News You Can Use, Resource Reviews, and Networking Editor, Raquel Praino. I encourage those of you who are interested in contributing to The Integrative RDN to get in touch with any one of them to share your ideas.

The newsletter would not be what it is without the capable and competent Copy Editor, Emily D. Moore, MS, RDN, LDN, and our Associate Newsletter Editor, Jena Savadsky Griffith. Between the two of them, they make sure that the references are correctly referenced, the grammar is 'good', and all of the i’s are dotted and the t’s are crossed. We also rely on the peer reviewers, Linda Lockett Brown, ABD, M.Ag, RDN, LDN, CLC and Christian Calaguas, RDN for their expert review.

This issue of The Integrative RDN includes cutting edge topics such as the Ketogenic Diet and how it and calorie restriction can affect our health and longevity. Stay tuned for the Fall issue when the CPE article will be discussing mTOR, the mechanistic (or mammalian) target of rapamycin pathway; this is also an up-and-coming topic that will give members an edge in their knowledge of integrative and functional nutrition. Both are complex and intriguing topics. This issue also includes one physician’s application of an integrative approach to GI conditions using functional foods, a Ginger Article from our networking partner the American Botanical Council, reviews of two fascinating books, as well as the regular Botanicals/Functional Foods column. I have the privilege of working with leaders in the field, not only our Executive Committee, but also the Newsletter Team who works diligently to find authors for articles on topics that advance our knowledge.

Have a great summer and stay cool.

Sarah

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