



Virtual!

NUTRITION BASICS 101



Canadian School
of Natural Nutrition

4 sessions! 6 hours total!

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Proper Digestion & Gut Health

What is nutrition?

- For many, this solely means 'food', but nutrition is more defined in the area of science on how the body digests, metabolizes and stores nutrients.
- Nutrition is not only about what we consume, it is also about eating patterns, types of foods, and the food supply and safety.
- So what is the role of nutrition to our health? How can it contribute to illness? Is all nutrition and food good for you?

What is Health?

- Health can have a different meaning for each of us.
- Usually people think of health as the absence of illness or disease.
- The WHO defines it as a state of complete physical, mental and social well-being and not merely the absence of disease.
- Nutrition is only one factor that contributes to health.
- Take a moment and think about what health means to you.
- Let's talk about where it all begins!

It All Starts in the Gut!

- Why do we need to start with digestion and gut?
- Well it was Hippocrates that stated, "all disease begins in the gut."
- No matter how well you do eat, if you are not digesting and utilizing the nutrients from that food, your body may not see the benefit from that food. In time, this may lead to symptoms and health issues.

The GI Tract:

There are four main functions of the GI tract:

1. _____

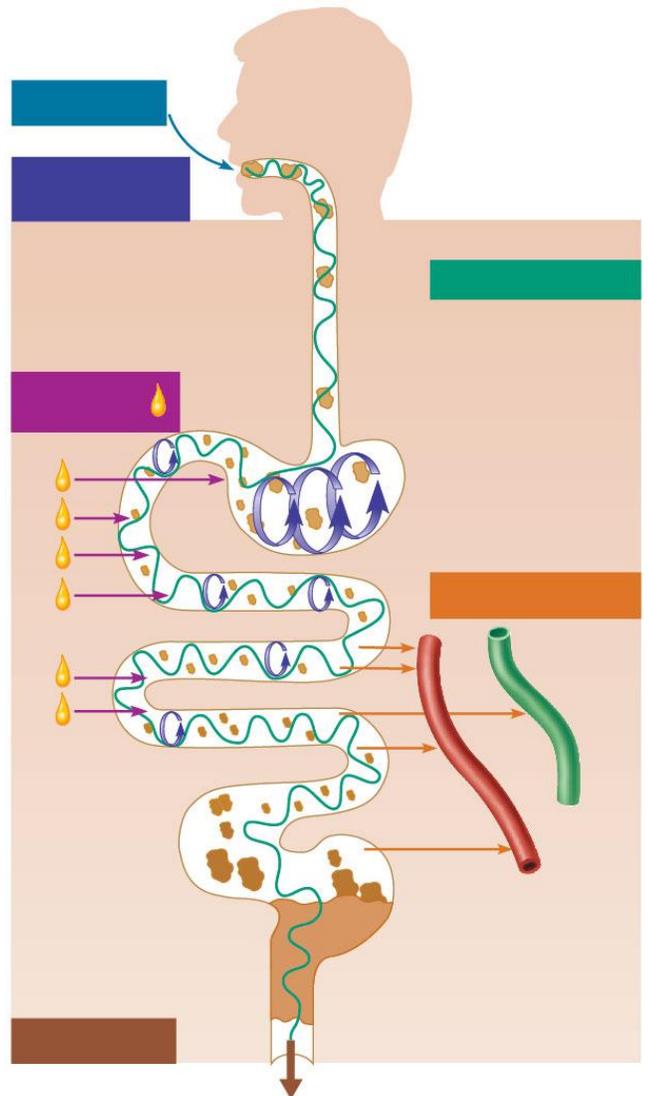
2. _____

3. _____

4. _____

Digestive system composed of two parts:

- 1st part is a long tube like tract – measuring 20 to 25 feet – running between the mouth & the anus, including the oral cavity (mouth), pharynx (throat), esophagus, stomach, small intestine & large intestine.



- 2nd part consists of six associated structures – teeth, tongue, salivary glands, liver, gallbladder & pancreas.

Alimentary canal and accessory organs:

- Carbohydrates start the breakdown process in the mouth.
- Protein digestion takes place in the stomach.
- Fats need to be emulsified for absorption and are utilized in the small intestine.

Digestion Starts in the Mouth:

- Chew your food to a _____ form.
- The mouth performs an important part of digestion, as it starts _____, which are the muscular contractions that move food through the entire digestive and intestine tract.
- _____ is a digestive enzyme secreted in the mouth that is needed to digest starches - alkaline base.
- No starch digesting enzymes are in the stomach, which is an acid base needing hydrochloric acid (HCl) to digest proteins.
- When the food reaches the small intestine, enzymes from the pancreas are secreted to complete the breakdown process of food.

Digestion & elimination are interdependent:

- Foods such as bread, meat & vegetables are not in a form that the body can utilize or use as nourishment.
- Our food & drink must be changed into smaller molecules before they can be absorbed into the blood.
- The function of the digestive system is to break food down – Mechanically & chemically
- Protein = amino acids
- Fats = fatty acids & glycerol
- Carbohydrates = simple sugars

The Liver:

- The liver is the largest internal organ of the body, and it is considered a chemical factory.

Some of the main functions of the liver are:

- Detoxification: _____

- Production of: _____
- Processing of _____ into proteins
- Conversion of _____ into glycogen for stored energy
- Regulation of: _____, _____, _____ and _____

The liver is the most important organ of detoxification.

4 methods of identifying, neutralizing, and sending toxic substances out of the body

1. Filtering the blood - 4 liters per minute
2. Bile excretion - produced by the liver and housed by the gall bladder.
3. Phase I detoxification - convert toxins from fat soluble to water soluble.
4. Phase II detoxification - requires a wide variety of nutrients.

Elimination:

- When food reaches the large intestine, most of the nutrients have been removed.
- What's left is a mixture of fiber, bacteria & cells.
- One final component that is absorbed from the colon is water.
- Food loses 2/3 of its weight as water is squeezed out & absorbed.
- A large number of bacteria live in the colon to help further process fiber, converting it into a substance called feces.



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Tips on Optimizing Digestion

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

Mindset & emotions affect digestion by determining the amount of enzymes produced, the quality & quantity of bile, the mucus secretion & the activity of the intestine - even the kind of bacteria that grow in the intestine.

What is the Microbiome?

- The word microbiome is defined as the collection of _____ or microorganisms that inhabit an environment.
- It incorporates all the bacteria, viruses, fungi, archaea and eukaryotes within the human body.
- The gut microbiome is now being considered a separate organ with distinct metabolic and immune activity.
- The human microbiota consists of about 10 to 100 trillion symbiotic microbial cells located throughout the entire GI Tract.

Gut Bacteria

- The large intestines need a massive amount of bacteria - over 3 lbs or 400 different species of bacteria reside in the colon to help with elimination and many other functions.

Some of the digestive functions that good bacteria offer are:

- _____
- _____
- _____
- _____

- Imbalances between the good & bad bacteria in the gut can contribute to health issues such as _____, _____, and even _____.
- What we eat, how we eat, when we eat & our emotional state all play an important role in our digestion

Other Functions of Gut Bacteria:

- Produce _____ from food
- Manufacture neurotransmitters such as serotonin, GABA and dopamine
- Helps to renew the _____ epithelial cells
- Helps to develop the _____ and our _____
- It also helps immune function and _____
- Even balances your mental well-being and hormones

Gut – Brain Connection:

- The gut bacteria interact with the central nervous system to regulate brain chemistry and mediate _____, _____, and _____.
- Certain bacteria in the gut produce approximately 90 - 95% of peripheral serotonin, an important neurotransmitter within the brain-gut axis that is essential for emotional well-being and bowel motility.

What Influences Gut Bacteria?

- Diet – _____ / refined foods – high _____ diet - SAD
- Poor quality/rancid _____ and trans fats
- Rigid diet – not enough variety - Eat the _____!
- Lack of fibre - SAD only consists of about _____ grams per day
- _____ use
- _____
- Lack of _____
- _____ lifestyle

What is Gut Dysbiosis?

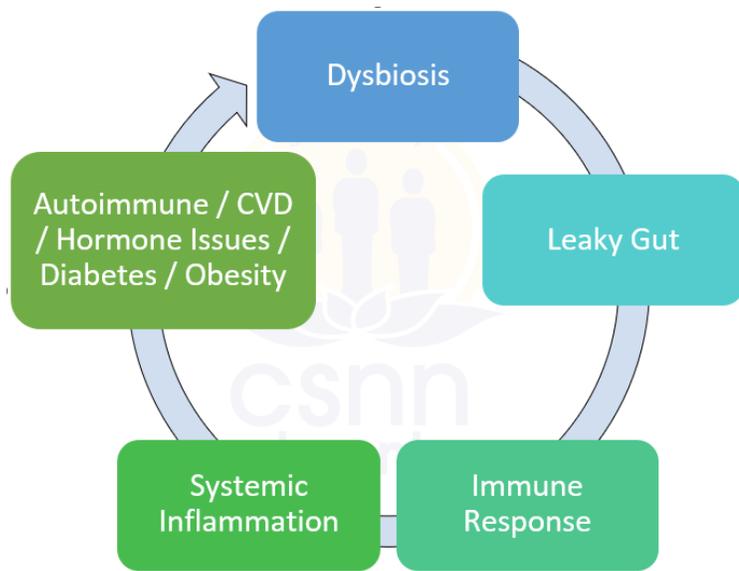
Gut Dysbiosis is the imbalance of bacteria in your gut. When gut dysbiosis occurs, one or more of these changes occur:

- You lose beneficial bacteria in your gut
- You get potentially harmful bacteria taking over your gut

- You have less diverse bacteria in your gut
- Harmless bacteria are called "good bacteria". The rest of the bacteria are called "opportunistic bacteria", meaning they will not cause any harm as long as they are kept in check by the good bacteria. Otherwise they can wreak havoc on your body and cause gut dysbiosis!

Effects of Intestinal Permeability:

- The intestinal lining will become damaged due to repeated exposure from allergens/toxins, which damage the microvilli.
- This also contributes to the development of more allergies.
- Once the microvilli are damaged, digestion is impaired & the absorption of nutrients from food decreases.
- With absorption being reduced, one cannot fight off inflammation naturally as they are deficient in the vitamins/minerals that help fight inflammation.



Probiotics:

- "Gut Bugs"
- Probiotics can be found in both _____ and _____
- Probiotics are "live microorganisms" and the word probiotic literally mean 'for life'.
- Probiotics are known as friendly bacteria, which are supposed to help colonize our guts with health-boosting microorganisms.
- Probiotics are usually bacteria, but there is also a type of yeast that can function as a probiotic.
- There are dozens of different probiotic bacteria that have been shown to have health benefits, but the most common groups include Lactobacillus and Bifidobacterium.

Prebiotics:

- "Gut Bug Food"
- The term prebiotic is defined as 'a non-digestible food ingredient that beneficially affects the host by selectively stimulating the growth and/or activity of the bacteria in the colon to improve the health of the host'.
- Basically, prebiotics feed the _____.
- They are oligosaccharides, which must resist digestion and absorption before _____ by the gut bacteria.

Foods High in Probiotics and Prebiotics:

Probiotics:

- Live cultured yogurt
- Cheese
- Kefir
- Kombucha
- Sauerkraut and kimchi
- Miso Soup
- Fermented vegetables – beets / carrots / asparagus
- Tempeh

Prebiotics:

- Raw banana
- Raw onion
- Raw garlic

- Leek
- Chicory root
- Dandelions greens
- Asparagus

Dietary Suggestions for Digestion & Gut Health:

- Soaked chia seeds in coconut milk with raisins and cinnamon.
- Poached egg with steamed asparagus spears.
- Banana slices in plain yogurt.
- Smoothie with kefir, banana, and berries.
- Leafy green salad, topped with hemp seeds and a dressing made of hemp or olive oil, apple cider vinegar (ACV), minced raw garlic, oregano, and basil.
- Baked chicken with steamed beets and a side of sauerkraut.

Resources:

<https://www.ncbi.nlm.nih.gov/pubmed/22162969>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4315779/>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4367209/>

<https://www.ncbi.nlm.nih.gov/pubmed/24665099>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4191858/>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3426293/>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4290017/>

<https://www.nature.com/articles/nature06244.pdf>

Macronutrients

What is a Carbohydrate?

- Carbohydrates are a macronutrient and a plant-derived energy.
- They are the primary source of energy for the body.
- Carbo – carbon + hydrate – water = carbohydrate
- Carbohydrates are a vast group of foods, which consist of grains, vegetables such as corn, potatoes, beets, carrots, cabbage, fruit, sugars, and even foods such as legumes and peas or nuts and seeds have carbohydrates.
- No single carbohydrate – fruit, vegetable or grain, will provide all the necessary nutrients needed to be healthy.
- Eating a variety of whole foods can ensure a balanced diet.

What Do Carbohydrates Do for the Body?

- Carbohydrates are the main and preferred source of energy for the body.
- Carbohydrates provide fibre for bowel motility and colon health.
- Nutrients and fibre in carbohydrates help manage blood glucose.
- They provide essential nutrients for biological functions such as B vitamins needed for brain function.
- Carbohydrates also help to metabolize _____ and _____.

Classes of Carbohydrates:

Monosaccharides – glucose / fructose / galactose

Disaccharides – maltose / lactose / sucrose

Oligosaccharides – FOS – Prebiotic / Honey

Polysaccharides - complex carbohydrates or starch

Fibre

Sugar:

- Sugar is composed of _____ and _____ to form _____.
- It is a simple carbohydrate.
- There is naturally occurring sugar in food such as fruit – pineapple, blueberries and even dairy has some natural sugars, which are a part of a healthy diet.
- A healthy diet will contain about _____% total intake of these natural sugars.
- Then there is added sugar in foods such as pop, candy or baked goods. These usually consist of refined sugars compared to natural sugars.
- They are changing the labeling laws for sugar in Canada
- <https://www.canada.ca/en/health-canada/services/food-labelling-changes.html#a4>

Sugar & Health:

- Research shows a link between sugar consumption and _____ such as cancer, depression, hyperactivity, & non-alcohol fatty liver disease plus sugar increases _____ in the body.
- Sugar is an _____ substance.
- Health problems occur when the diet is too high in simple sugars.
- The average person consumes about 17-22 tsp of added sugars in their diet per day (57 lbs per year), which the highest source is from sugar-sweetened beverages (SSB). <https://sugarscience.ucsf.edu/the-growing-concern-of-overconsumption.html#.XqovdahKIM8>
- There is a risk of diabetes, weight issues and obesity.
- A study in 2014 - *JAMA Internal Medicine* - showed an association between a high-sugar diet and a greater risk of dying from heart disease. Over a 15-year study, people who consumed 17% - 21% of their calories from added sugar had a 38% higher risk of dying from cardiovascular disease compared with those who consumed 8% of their calories as added sugar. <http://www.onlinejacc.org/content/66/14/1615.full>

What About Artificial Sweeteners?

- Artificial sweeteners are a sugar substitute and food additive.
- These sugar substitutes are _____, not naturally occurring, so how the body and even brain responds to them is unique and complex.
- Studies suggested that consuming artificial sweeteners can create _____ and promote glucose intolerance in healthy individuals that may lead to the development of Type 2 Diabetes.
- There are no long-term studies that show the effectiveness of products like aspartame and weight loss. In fact, recent studies show the opposite – aspartame intake and weight gain.

Fruit

- Most fruit is low in sodium, fat and calories and high in vitamins _____, _____, _____, and _____.
- Fruit is an excellent source of energy and antioxidants to help reduce _____ stress.
- Nutrients from fruit can help reduce the risk health issues such as cardiovascular disease, cancer, and _____ conditions.

Starch vs Non-Starch Vegetables:

- Some resources say to avoid starches as they can increase blood glucose levels and can create issues if someone has blood sugar management issues or weight issues.
- Yes, starches are higher on the glycemic index, but they also have vitamins and minerals, so it is not about avoidance, but moderation and choice – yam or squash vs white potatoes.
- Starch will also provide a quick form of energy (calories) and fibre.
- Non-starch vegetables also provide lots of vitamins, minerals and fibre, but can give bulk to our meals without adding lots of extra calories.

List of Starchy Vegetables:

- Yam
- Potato / sweet potato
- Squash
- Pumpkin
- Grains
- Turnip
- Peas
- Corn
- Beans
- Parsnips
- Plantains

List of Non-Starch Vegetables:

- Leafy greens
- Brassica vegetables
- Carrots
- Beets
- Cucumber
- Onion
- Sprouts
- Artichoke
- Snow peas
- Swiss chard
- Bell peppers
- Tomatoes
- Mushrooms
- Green / yellow string beans
- Zucchini
- Eggplant
- Asparagus
- Celery
- Leek
- Watercress

Grains:

- This starchy carbohydrate contains a wide variety of different grains such as wheat, rice, millet, corn, quinoa, rye, barley, oat and buckwheat.
- Grains can be either _____ or _____.
- Grains are a starch, which can contribute to health issues if eating in a high amount.
- Lower or moderate intake of whole grains are a part of a healthy diet.

Fibre:

- Fibre is part of the plant that the body cannot break down or _____.
- There are two types of fibre – _____ and _____.
- Insoluble is the _____ the provides the bulking agent of feces.
- Soluble fibre helps to _____ digestion and maintain healthy blood sugar levels. It also helps the absorption of nutrients.

Water Intake:

- A healthy, calorie-free beverage – water!
- Optimal daily intake should be 2.8-3.2 litres per day. Many factors affect the amount of water we need such as diet, exercise, climate, and state of health.
- Staying hydrated is important to overall health as you need water for many body processes.
- Fibre cannot work properly without sufficient water intake.
- Quality and source of water is also important.

Meal Ideas with Healthy Carbs:

- Smoothie with banana, berries, and coconut milk.
- Steal-cut oats with sliced apple bits, cinnamon and topped with hemp seeds.
- Quinoa pasta salad with pieces of broccoli, bell pepper and purple onion - seasoned with garlic, apple cider vinegar, dill, parsley and oregano.
- Vegetarian chili with kidney beans, black beans, chickpeas in a base of stewed tomato.
- Squash topped with sautéed snow peas, carrots, broccoli and cabbage – season to taste.

Fats:

- Fats are a high _____ component of food.
- Fats are not soluble in _____.
- For every gram of fats, there is ____ calories – carbohydrates and proteins only provide ____ calories per gram.
- Essential fats should make-up about _____ of our body weight.
- Healthy fat range for men and women differ and are different at various ages throughout life.

Functions of Fats:



Concentrated source of energy for the body – stored energy.

Provides insulation and protects internal organs.

Fats are needed for the absorption of fat-soluble vitamins.

Fats act as chemical messengers – maintaining nerve impulses and communication.

Fats are needed for the production of hormones.

Saturated vs Unsaturated:

- Saturated fats are _____ at room temperature.
- What makes them saturated and solid is that they contain the maximum amount of _____ atoms, all with single bonds.
- Most sources of saturated fats are from animal with the exception of _____.
- Unsaturated fats are liquid have hydrogen atoms missing and contain a double bond.

- Unsaturated fats are from _____
- Unsaturated fats have two forms – monounsaturated and polyunsaturated.

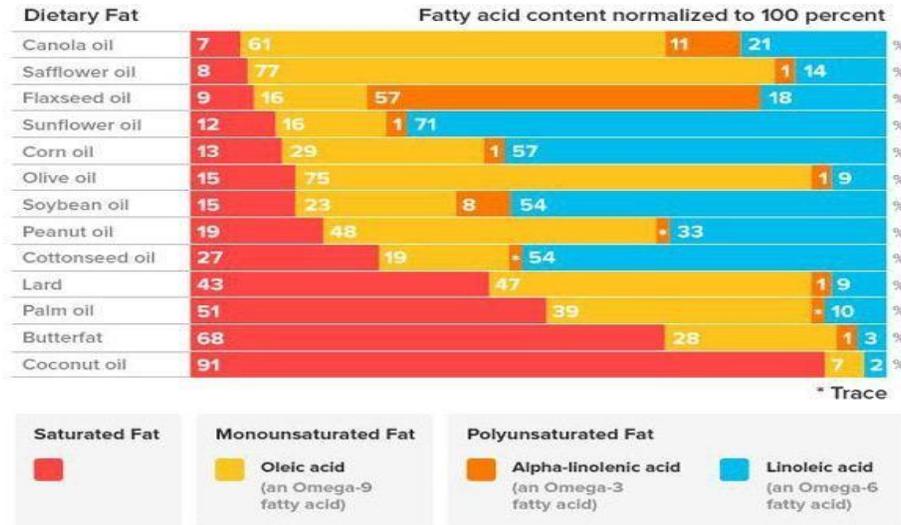
Mono & Poly Unsaturated Oils:

- Monounsaturated oils are missing a few hydrogen atoms whereas polyunsaturated oils are missing many hydrogen atoms.
- Both types of oils have health benefiting properties and are part of a healthy diet and lifestyle.

- Sources of monounsaturated oils are _____

- Monounsaturated is an omega _____, which a higher amount is consumed in the Mediterranean diet.
- Polyunsaturated oils have two categories – omega ____ and omega _____, which are essentials to the body as they are only obtained through diet.

Classifying Fats:



Source: POS Pilot Plant Corporation

Omega 3 & Omega 6:

- These two polyunsaturated oils are needed for proper nerve and brain function, cellular growth, blood clotting and even blood thinning, the body's immune regulation and inflammatory response and hormonal and metabolic processes.
- Omega 6 sources are _____
- Omega 3 sources are _____
- Healthy ratio of omega 3 to 6 is 1:____, but most people ingest a 1:20 ratio.
- One thing to note is that fat contains a percentage of the different types, but categorized by the highest percentage – ex: flax is higher in omega 3, but also contains omega 6 plus monounsaturated and saturated fats.

Bad Fats vs Good Fats:

- It is the amount and type of fat in your diet that can either predict or reduce the risk of health disorders.
- Saturated fats are deemed the unhealthy fats, but a moderate amount of saturated fats can be incorporated in a healthy diet. An important point to note with saturated fats or any fat is quality – grass-fed vs grain-fed / rancid or trans fat / cold-pressed.
- This is the same for omega _____ oils, which are rancid or have oxidized, as this can increase inflammation and oxidative stress in the body contributing to health issues. Not all omega 6 oil are good for the body.

Omega 3 – DHA & EPA:

- Omega 3 oils are the _____ of all the fats.
- Omega 3 oils provide EPA & DHA, which help overall _____ and _____ function.
- These oils help to reduce _____.

- Lowers _____ & _____ levels.
- Helps improve mental well-being.
- Helps with _____ and memory factors.
- These oils also play an important role in _____ health.

Fats & Cardiovascular Health:

- There are many organizations that quote, 'saturated fats cause heart disease'.
- Heart disease is not solely caused by _____ fats. The consumption of rancid and trans fats also play a role, which are a source of unsaturated fats.
- The over consumption of refined _____, poor quality fats or even saturated fats can contribute to certain health issues.
- A healthy diet should include a good amount of omega 3 oil to help reduce any risk associated with other fats and cardiovascular health.

Fats & Weight:

- Excessive fats in the diet can promote the growth of _____ tissue, but this can also stem from a high consumption of refined sugars, which is stored as glycogen.
- _____ and weight issues are connected to systemic inflammation, poor blood sugar management, sedentary lifestyle, poor dietary habits plus hormone imbalances. It is not just linked to an intake of dietary fats.
- When considering a healthy diet & lifestyle, this includes all factors that relate to health such as _____, good quality whole foods and positive mindset.

Smoke Points of Fats and Oils	
Fat/Oil	Degrees Fahrenheit
Flax Oil	225
Canola Oil, unrefined	225
Safflower and Sunflower Oil, unrefined	225
Corn Oil, unrefined	320
Peanut Oil, unrefined	320
Olive Oil, extra virgin	320
Butter	325-375
Coconut Oil, unrefined	350
Vegetable Shortening (e.g., Crisco)	360-370
Lard	360-400
Safflower and Sunflower Oil, refined	450
Corn Oil, refined	450
Peanut Oil, refined	450
Canola Oil, refined	425-475
Clarified Butter (Ghee)	400-500

Oils in the Kitchen:

- Having a variety of different oils in the kitchen can give you options between cooking oils and oil best served cold.
- Extra-virgin olive oil or avocado oil
- Hemp oil or flax for salad dressings
- Coconut oil or ghee for medium to high heat.



LESS THAN 350°F

NO / LOW HEAT
Dressings, Sauces, Dips

- OLIVE OIL
- FLAX OIL
- HEMP OIL
- PUMPKIN SEED OIL
- WALNUT OIL

LESS THAN 400°F

MEDIUM HEAT
Sautee, Baking + Roasting

- COCONUT OIL
- GRASS-FED BUTTER
- ANIMAL FAT (LARD, TALLOW)

LESS THAN 450°F

MEDIUM-HIGH HEAT
Frying + Stir-Frying

- GRASS-FED GHEE (CLARIFIED BUTTER)
- SESAME OIL
- DUCK FAT

LESS THAN 500°F

HIGH HEAT
Deep Frying + Searing

- AVOCADO OIL
- RED PALM OIL
- ROOT + REVEL

Meal Ideas with Healthy Fats:

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Protein:

- A protein is a very large, complex molecule that is found in all living things.
- _____ is what makes proteins differ from fats and carbohydrates, which we need nitrogen for many body processes.
- Unless you are a child, pregnant, an athlete in training or have an illness, your aim is to be in a nitrogen _____ state.
- Protein is the structural material that supports growth in both humans and plants, so all foods (plant & animal) contain protein.
- The building blocks of protein are known as _____.

Why Protein is Important?

- Protein can be used for _____ if the diet is low in _____ or _____.
- Protein is needed for _____ and _____ of body tissues.
- It is essential for our immunity as protein is needed to manufacture antibodies.
- Enzymes needed to digest food and support chemical reactions in the body are made from protein.
- Protein helps our acid-alkaline and fluid balance in the body.
- Protein is needed to synthesize neurotransmitters and hormones.

Age	Daily Protein Needs	Daily Protein Needs
Infant	0.7 grams per lbs weight	1.5 grams per kg weight
1-3 years	0.5 grams per lbs weight	1.1 grams per kg weight
4-13 years	0.43 grams per lbs weight	0.95 grams per kg weight
14-18 years	0.39 grams per lbs weight	0.85 grams per kg weight
18+ adults	0.37 grams per lbs weight *	0.8 grams per kg weight *
Pregnant	0.5 grams per lbs weight	1.1 grams per kg weight
Lactating	0.5 grams per lbs weight	1.1 grams per kg weight

Essential vs Non-Essential:

- Out of the 20 amino acids that make-up our body, _____ of them are essential, so we must obtain these through diet.
- The non-essential amino acids, our body can make them in sufficient quantity.
- If a food is lacking certain essential amino acids, it is called _____ and we would need to complement that food with another high in the missing essential amino acids.

Meat vs Plant-Based:

- Everyone has different dietary needs, which some do very well on a plant-based diet, where others have a biochemistry make-up that require the consumption of animal protein.
- Peoples likes and dislikes also need to be considered.
- One eating style is no more or less beneficial than the other.
- Consuming more plant-based foods has been shown to have many health promoting benefits, which reducing the consumption of animal protein can help reduce the risk of certain health conditions.
- Portion size matters - one ounce of meat contains about 7 grams of protein, a serving of four ounces can provide one's protein needs.



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Protein Sources:

Quality of Protein:

- Good quality _____ protein is an important part of a healthy diet.
- With protein sources from _____, fat content and type also matters. All animal protein contains _____.
- Whole quality meats should be consumed instead of processed deli meats.
- Protein quality also deals with the digestibility and _____ of the essential amino acids in that source.

Meal Ideas for Protein:

Vitamins & Minerals:

- Both _____ and _____ are micronutrients as the body needs them in smaller amounts compared to carbohydrates, fats and proteins, but they are just as important to a healthy diet.
- Vitamins and minerals do not provide the body with calories or energy.
- Vitamins and minerals are found in both _____ and _____ sources.
- Most vitamins are essential and need to be supplied from the diet, except for some ____ vitamins and vitamin ____ that are synthesized by our gut bacteria.
- Vitamins are categorized as _____-soluble or _____-soluble.

Vitamins & Mineral Facts:

- Both vitamins and minerals are co-enzymes – the body's little helpers for metabolic reactions.
 - Vitamins and minerals are essential for:
-

Vitamin C

- Vitamin C is also water soluble plus a co-enzyme needed for immunity, a powerful antioxidant, proper tissue repair – needed to synthesis collagen and reduces inflammation.

B Vitamins

- B vitamins are water soluble and consist of a group of eight singular B vitamins (B1, 2, 3, 5, 6, 7, 9, 12), which are found together in most foods. With some health conditions, singular Bs are needed in a higher amount.
- B vitamins are needed for energy production, mental well-being & reducing stress, as B vitamins are co-enzymes needed to synthesis neurotransmitters. They are also involved in homocysteine metabolism.

Vitamin A

- Vitamin A is both fat and water soluble. There are two forms – retinol or beta
- Vitamin A helps to strengthen vision, increase immunity, protects the body against oxidative stress - antioxidant and vitamin A is needed for overall health of the skin – 1st line of defence. It is also needed for growth and development.

Vitamin D

- Main use for vitamin D is the absorption of calcium for bones and teeth, but research has also showed how important vitamin D is in increases immunity and for mental well-being. Vitamin D is a fat-soluble vitamin.

Vitamin E

- Vitamin E is fat-soluble that is effective in reducing the risk of heart disease & reducing cholesterol deposits as it is an anti-coagulant, helping to thin the blood. It is also a powerful antioxidant, natural preservative, reduces inflammation and supports immunity.
- Vitamin E is dependent on vitamin C, vitamin B3, selenium and glutathione. A diet high in vitamin E cannot have a beneficial effect unless it is also rich in foods that provide these other nutrients.
- Best sources are wheat germ oil, butter, egg yolk, whole grains, nuts & seeds

Vitamin K:

- Vitamin K is fat-soluble that needed for normal blood clotting (coagulation) and for bone mass. Recent research shows that vitamin K offers a protective role in age related illnesses such as arthritis and CVD. It also helps to reduce low-grade inflammation.
- Plant sources: most green plant - dark leafy greens, alfalfa, kelp and fermented foods
- Animal sources: dairy products / egg yolks

Minerals:

- Body is 4-5% minerals, mostly found in our skeletal system, our tissues, blood, nerve, muscle & organs.
- Minerals are also found in the rock and soil of the Earth.

Calcium:

- Calcium is the most abundant mineral in the body, needed to build strong bones and teeth. It is also needed for nerve impulses and muscle contractions.

Magnesium:

- Magnesium is a co-factor responsible for over 300 enzyme reactions that help with energy production, blood sugar balance and normal heart rhythm.
- Magnesium rich foods help muscle tone – heart is a muscle, muscle contractions, nerve impulses and aids proper sleep

Potassium

- Potassium helps to regulate water & fluid balance in the body, which is for blood pressure. It is also needed for nerve signals and muscle contractions.

Sodium & Chloride:

- Both these minerals are electrolytes, which along with potassium, found in the blood & body fluids
- Where sodium goes, water goes – watch consuming too much.
- Functions are similar to potassium, muscle contractions & nerve impulses.
- Chloride is a mineral needed to produce HCl

Sulfur:

- Sulfur is the 3rd most abundant mineral in the body, which provides structure & elasticity for the skin and connective tissue for the joints. The body requires a steady supply of sulfur for processes such as detoxification and the production of glutathione.
- Most sulfur is derived by protein – sulfur bearing amino acids

Chromium

- Chromium helps regulate blood glucose to support the function of insulin in the body - GTF.

Selenium:

- Selenium is an antioxidant that supports immune function. It helps the body produce unique proteins called selenoproteins that are antioxidant enzymes that reduce cellular damage in the body. Selenium is needed for thyroid health and mental well-being.

Iodine:

- Iodine is needed to manufacture thyroid hormones thyroxin & triiodothyronine – overall health of the thyroid gland.

- Energy production & cellular respiration, nerve & bone formation and our overall mental well-being.

Iron:

- Iron is needed for the synthesis of hemoglobin, which is responsible for transporting oxygen from the lung to the body's tissues. It is also needed for energy production. Vitamin C help the absorption of iron in the body.
- Watch too much iron as it can be corrosive to the body.

Manganese:

- Manganese is needed for the formation of cartilage and healthy joints. It activates enzymes in metabolic processes such as cholesterol, glucose balance and carbohydrate metabolism.
- Manganese also works with vitamin K in blood clotting.

Zinc

- Zinc is necessary for tissue & wound repair, immunity, taste & smell and the production of HCl. Zinc is needed to support prostate health and helps to reduce inflammation in the body.

Phytonutrients:

- Phytonutrients are also known as phytochemicals, which are chemical compounds produced by _____.
- Some resources state that phytonutrients are not essential to health like _____ & _____, but due to the health promoting benefits of phytonutrients, they are just as important.
- These phytochemicals protect the plant against certain threats such as insects or UV radiation and provide benefits to those who eat these plants.
- Phytonutrient-rich foods include all _____ fruits and vegetables, _____, nuts & seeds, tea, whole grains and many spices & herbs.
- Phytonutrients give plants their _____ or pigment, which are a source of _____ and anti-inflammatory properties.
- These properties support immunity, repair cellular damage from exposure to toxins, detoxify the body, reduce the damaging effects of carcinogens and improve estrogen & _____ metabolism.
- More than 8000 (some sources say over 25,000) different phytonutrient compounds have been identified, but only about 150 have been researched.
- The most common phytonutrients are:
 - Carotenoids / flavonoids / isoflavones
 - Lignans / phytosterols
 - Stilbenes – resveratrol
 - Catechins / quercetin / anthocyanins
 - Glucosinolates / indoles

Health Benefits:

- The role of phytochemicals in human health are:

<ul style="list-style-type: none"> • Antimicrobial • Antioxidant & anti-inflammatory • Anti-allergic & antihistamine • Anti-spasmodic 	<ul style="list-style-type: none"> • Anti-cancer • Anti-aging • Hepatoprotective • Lowers cholesterol levels • Neuroprotective • Lowers blood pressure 	<ul style="list-style-type: none"> • Analgesic • Protects from UVB-induced carcinogenesis • Immuno-modulator
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Antioxidants:

- Antioxidants are compounds that help to neutralize free radicals and oxidative stress.
- Foods rich in bright colours – red / purple / dark green / orange / yellow provide antioxidants needed to reduce _____.
- Epidemiological studies and meta-analyses suggest that long term consumption of foods rich in plant polyphenols offer protection against the development of _____, cardiovascular diseases, _____, osteoporosis and neurodegenerative diseases.

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Marketing for food stores
Use at home to plan your healthy family meals

Home care assistance
Wellness center owners
Become advisory board members in the non-profit sectors
Meal planning for those that require care, seniors or mental illness
Teach workshops
Enlist public speaking assignments & opportunities
Become an Instagram or Facebook influencer
Become a niche social media specialist or blogger for the industry
Understanding your own (or family) health issues
Create balance and specialty meals (gluten-free, diabetic, dairy-free, etc)

Anti-Inflammatory Benefits:

- Polyphenols regulate immunity by interfering with immune cell regulation, pro-inflammatory cytokine synthesis, and gene expression.
- Inflammation is known to be a major factor linked to different disorders such as cancer, diabetes type II, obesity, arthritis, neurodegenerative diseases, and cardiovascular diseases.
- Meta-analysis studies have reported that an intake of three cups of tea per day reduces CVD by 11% while adequate intake of red wine is associated with 32% lower risk of cardiovascular disease.
- Soy and cocoa flavonoids contribute to the prevention of CVD as per meta-analysis of randomized controls trial.
- Polyphenols exert their protective effects in CVD due to their anti-hypertensive potentials.
- Many epidemiological and experimental researches have been studying the anti-inflammatory and immune modulation activities of dietary polyphenols. The ability of these natural compounds to modify the expression of several pro-inflammatory genes
- Cardioprotective effects of resveratrol present in red wine grape and nuts were mainly attributed to its anti-inflammatory properties.
- _____ was shown to reduce the expression of inflammatory cytokines.

Inflammation & Heart Disease:

- Chronic inflammation generates a surplus of _____ which damage body tissues, damage _____, age us, & contribute to many degenerative diseases
- Chronic inflammation happens to be a factor in the development of most of the illnesses today, from the common cold to cancer.

What Contributes to Inflammation?

Pro-inflammatory Foods:

- Omega 6 oils from saturated fat / rancid oils
- Feedlot raised meats / processed meats
- Sugar & white flour / refined grains
- Acidic foods – pop / animal meat
- Dairy
- Hydrogenated oils
- Alcohol
- Artificial food additives – MSG
- Common food allergens – dairy / gluten / soy / nuts / eggs / nightshade vegetables

Polyphenols & Immunity:

- Polyphenol intake is associated with a direct change in the count and differentiation of specific _____ cells.
- An increase in T helper 1, natural killer, macrophages and dendritic cells were measured with the consumption of foods rich in polyphenols.
- Polyphenols have been shown to enhance anti-tumor immune activity, as well as immunomodulatory processes and intestinal mucosal immunity.

Polyphenols & Brain Function:

- The quest to understand _____ has led to the extensive study of plant polyphenols with the aim to reduce age-associated deterioration and diseases, including neurodegenerative diseases such as Alzheimer's disease.
- Berries are a great source of polyphenols and wild blueberry diet supplementation was proved to improve _____ function in older adults.

- Intake of berries such as pomegranate, strawberry, blueberry and blackberry ameliorated several aspects of _____ and _____.

Role of Gut Bacteria with Phytochemicals:

- Bioavailability is the proportion of the nutrient that is digested, absorbed and metabolized through normal pathways.
- Bioavailability of each polyphenol differs, which there is no relation between the quantity of polyphenols in food and their bioavailability in human body.
- Polyphenols can be absorbed in the small intestine; however most polyphenols are present in _____ in the form of esters, glycosides or polymers that cannot be absorbed in their natural form.
- Before absorption, these compounds must be hydrolyzed by intestinal _____ or by the gut microflora.
- _____ bacteria help degrade and process polyphenols. Our gut flora help increase the bioavailability of these key phytonutrients needed for overall health.

Anti-Inflammatory & Immune Supporting Nutrients

- Vitamin A, Vitamin C, Vitamin D, Vitamin E, Zinc, Flavonoids , Bromelain, Omega 3

Begin with one serving of each color every day from the charts shown here. Then try to build up to two servings of each color every day.

White	Orange	Red	Purple	Green
Mushrooms	Lemons	Pink Grapefruit	Blueberries	Spinach
Horseradish	Passion Fruit	Guava	Boysenberries	Green Peppers
White Kidney Beans	Oranges	Pomegranate	Red Cabbage	Watercress
Parsnips	Cantaloupe	Radishes	Black Currants	Lettuce
Garlic	Carrots	Raspberries	Eggplant	Zucchini
Cauliflower	Apricots	Strawberries	Purple Potato	Broccoli
Black-Eyed Peas	Sweet Potatoes	Acerola Cherries	Black Beans	Brussels Sprouts
Pears	Tangerines	Tomatoes	Plums	Green Beans
Turnips	Squash	Red Apples	Beets	Soybeans
Onions	Papaya	Cranberries	Blackberries	Green Tea
	Corn	Watermelon	Figs	Kale
	Pineapple		Grapes	Collard Greens

Meal Ideas with Phytonutrients:



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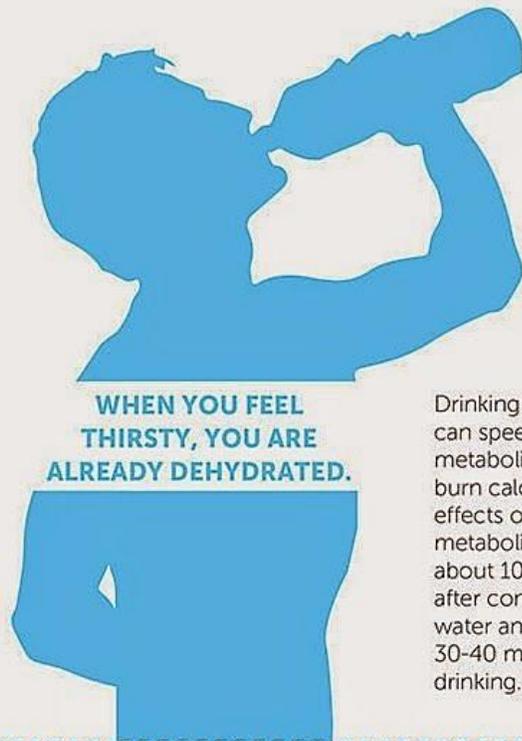
Lifestyle Suggestion

- Stress Management
- Moderate exercise
- Yoga
- Sauna
- Lymph baths
- Skin brushing

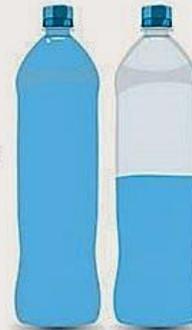
Water Intake:

- A healthy, calorie-free beverage – water!
- Optimal daily intake should be _____ litres per day. Many factors affect the amount of water we need such as diet, exercise, climate, and state of health.
- Staying hydrated is important to overall health as you need water for many body processes.
- _____ cannot work properly without sufficient water intake.
- _____ and _____ of water is also important.

DID YOU KNOW...

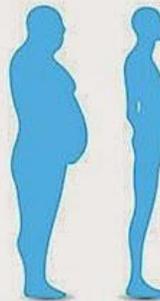


Drinking two 8-ounce glasses of water before breakfast, lunch, and dinner while also cutting back on portions will help you lose weight and keep it off for at least a year, according to research.



Researchers estimate that over the course of a year, a person who increased his water consumption by 1.5 liters a day would burn an extra 17,400 calories, for a weight loss of approximately five pounds.

Drinking cold water can speed your metabolism and burn calories. The effects of elevated metabolism begin about 10 minutes after consuming the water and peak at 30-40 minutes after drinking.



You should Drink only Water! The number one source of excessive calories in a person's diet is sugar-based beverages such as soda and fruit juices.

Just one can of soda pop:

35 grams of sugar
140 calories

Glass of water:

0 grams of sugar
0 calories

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SOURCES

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