



Canadian School of Natural Nutrition

Healthy Eating & Lifestyle

Supplemental Booklet

csnn
edmonton

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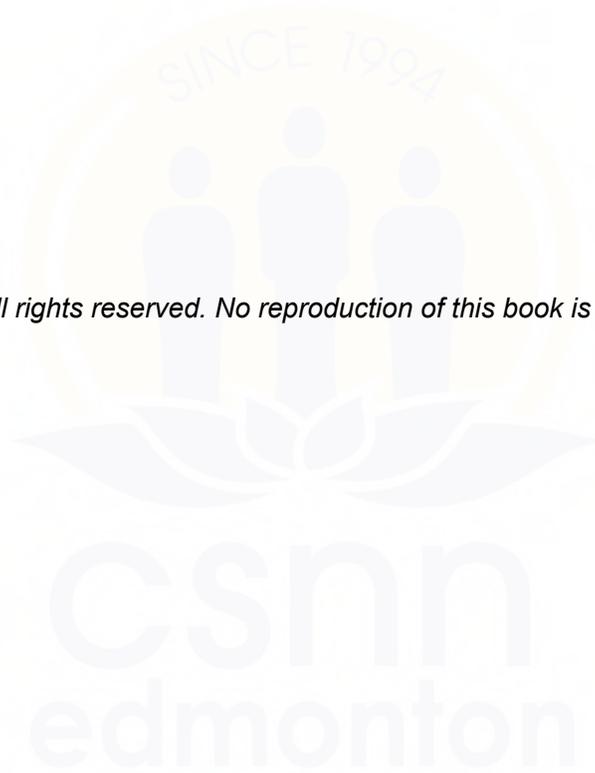
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Preliminary Exercise

Before we get started, take a minute to list out your current eating style. Choose a few days and write down what you have eaten. Try to do this without judgement and write everything down. Doing this exercise helps you look critically at your food choices and helps you with your learning over the next few courses.

DAY 1
BREAKFAST
MID-MORNING SNACK
LUNCH
AFTERNOON SNACK
SUPPER
NIGHT SNACK

How much water did you drink today?
--



Your Notes



DAY 2

BREAKFAST

MID-MORNING SNACK

LUNCH

AFTERNOON SNACK

SUPPER

NIGHT SNACK

How much water did you drink today?

Your Notes

Session One

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.

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 contribute to health.
- Take a moment and think about what health means to you.

Today we will be discussing proper digestion and gut health.

- 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.

There are four main functions of the GI tract:

- Ingestion—taking in food
- Digestion—breaking food into nutrient molecules
- Absorption—movement of nutrients into the bloodstream
- Defecation—excretes to rid the body of indigestible waste
- Digestion & elimination are interdependent:

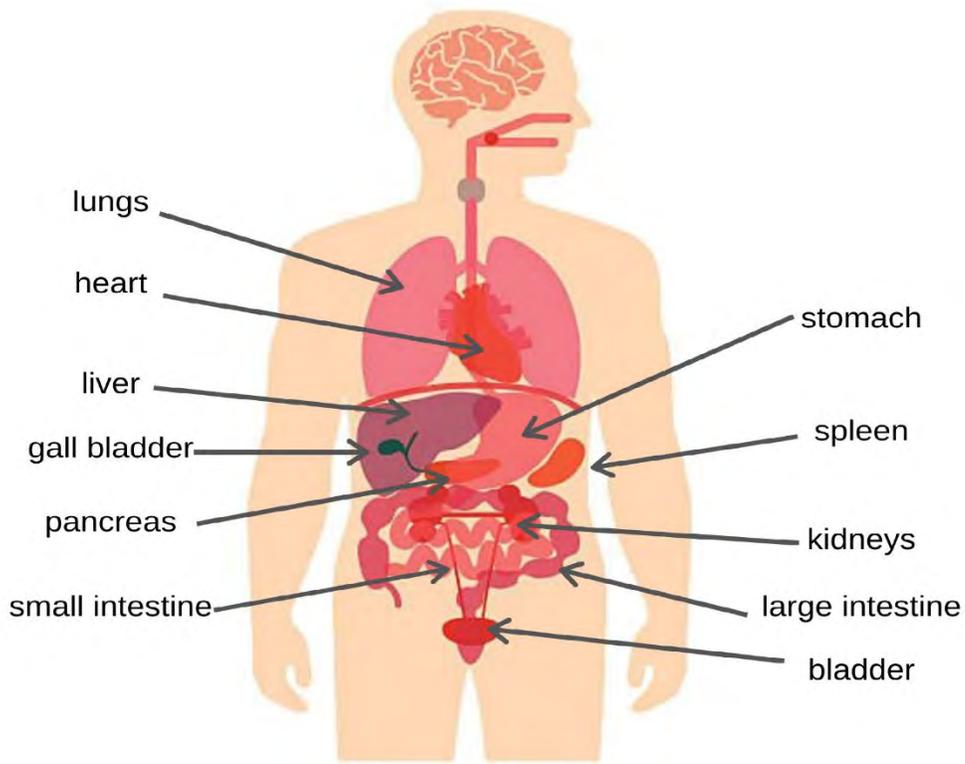
Foods such as bread, meat & vegetables are not in a form that the body can utilize or use as nourishment.

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
- Figure 14.11: Summary of gastrointestinal tract activities.
- 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), oesophagus, stomach, small intestine & large intestine
- 2nd part consists of six associated structures – teeth, tongue, salivary glands, liver, gallbladder & pancreas
- Figure 14.1 The human digestive system: Alimentary canal and accessory organs

Your Notes



Your Notes

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Digestion Starts in the Mouth:

- Chew your food to a liquid form.
- The mouth performs an important part of digestion, as it starts peristalsis, which are the muscular contractions that move food through the entire digestive and intestine tract.
- Saliva 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.

The Liver:

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

Some of the main function of the liver are:

- Detoxification
- Production of bile
- Processing of amino acids into proteins
- Conversion of glucose into glycogen for stored energy
- Regulation of hormones, sugars, proteins and fats

Elimination:

- When food reaches the large intestine, most of the nutrients have been removed.
- What's left is a mixture of fibre, 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 fibre, converting it into a substance called feces.
- 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:

- They are a source of some B vitamins & vitamin K
- Break down & destroy toxic chemicals
- Protect against pollutants
- Break down plant fibre & fatty acids
- Processes fibre & wastes in the colon

Imbalances between the good & bad bacteria in the gut can contribute to health issues such as constipation, IBS & even Crohn's

What we eat, how we eat, when we eat & our emotional state all play an important role in our digestion

- Chew your food!
- Food combining
- Eat enough fibre per day – 25 – 35 grams
- Allow sufficient time between meals for “cleanup”
- Manage fluids around meals
- Exercise
- Sleep

Mindset & emotions affect digestion by determining the number 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.

Microbiome:

- The word microbiome is defined as the collection of microbes 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.

Other Functions:

- Produce energy from food
- Manufacture neurotransmitters such as serotonin, GABA and dopamine
- Helps to renew the gut epithelial cells
- Helps to develop the immune system and our stress response
- It also helps immune function and metabolism
- 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 stress response, anxiety, and memory.
- 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 – processed / refined foods – high sugar diet
- Poor quality oils and trans fats
- Rigid diet – not enough variety
- Lack of fibre
- Antibiotic use
- Stress
- Lack of sleep and a sedentary lifestyle

Health Disorders Connected to Dysbiosis:

- 70% of your immune system is in your gut.
- 90% of disease can be linked to the gut and the state of the microbiome.
- Gut microbiome plays an important role in weight issues such as obesity.
- Other health disorders such as SIBO, IBS, allergies, CVD, Diabetes and so much more are also connected to an imbalance of gut bacteria.

Probiotics:

- Probiotics can be found in both foods and supplements.
- 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.

Your Notes

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:

- 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 gut bacteria
- They are oligosaccharides, which must resist digestion and absorption before fermentation by the gut bacteria.

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
- Dandelion greens
- Asparagus

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>

Your Notes

Session Two

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.

Classes of Carbohydrates:

- Sugar:
- Sugar is composed of glucose and fructose to form sucrose.
- 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 10% 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.

Hidden Sugar in Food:

Sugar & Health:

- 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>
- Research shows a link between sugar consumption and illnesses such as cancer, depression, hyperactivity, & non-alcohol fatty liver disease plus sugar increases inflammation in the body.
- Sugar is an addictive substance.
- Discuss ways to reduce sugar in the diet.

What About Artificial Sweeteners?

- Artificial sweeteners are a sugar substitute and food additive.
- These sugar substitutes are synthetic, not naturally occurring, so how the body and even brain responds to them is unique and complex.

Your Notes

- Studies suggested that consuming artificial sweeteners can create gut microbiota dysbiosis 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 A & C, fibre and potassium.

Fruit is an excellent source of energy and antioxidants to help reduce oxidative stress.

Nutrients from fruit can help reduce the risk of health issues such as cardiovascular disease, cancer, and inflammatory conditions

- Berries
- Cherries
- Citrus
- Apples
- Banana
- Pineapple
- Mango
- Grapes

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, and 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

Your Notes

- 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 refined or whole.
- 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.

The Gluten Dilemma:

- Gluten is a protein complex found in certain grains that consists of gliadins and is a known allergen in cases of Celiac, which is not only a gluten allergy, it is an autoimmune disorder.
- Gluten intolerance is becoming more common these days, but this is not an allergy. It relates to digestive and intestinal symptoms after gluten is consumed, not an immune response.
- Gluten-free is not a fad as research shows that gluten increases intestinal permeability and can increase the body's immune response, including the inflammatory response.
- What are good substitutes for gluten products? Are the gluten-free products on the market good for you?

Fibre:

- Fibre is part of the plant that the body cannot break down or digest.
- There are two types of fibre – soluble and insoluble.
- Insoluble is the roughage that provides the bulking agent of feces.
- Soluble fibre helps to slow down digestion and maintain healthy blood sugar levels. It also helps the absorption of nutrients.
- Fibre, along with beneficial gut bacteria, plays an important role in the health of the colon and body.
- It helps remove toxins, maintain healthy bowel motility,
- A healthy daily amount of fibre is between 25-35 grams per day.
- Average person has an intake of about 15 grams per day.
- High fibre foods such as chia or hemp seeds, peas, beans, avocados and berries can be added to the diet to help increase fibre intake.

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.

Your Notes

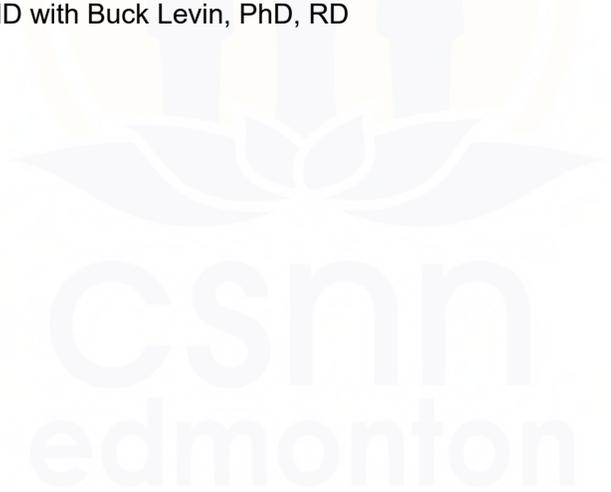
- Staying hydrated is important to overall healthy as you need water for many body processes.
- Fibre cannot work properly without sufficient water intake.
- Quality and source of water is also important.

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 fats and proteins.

Resources:

- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5133084/>
- <https://pubmed.ncbi.nlm.nih.gov/19335713/>
- <https://academic.oup.com/ajcn/article/78/4/858S/4690059>
- <https://www.mdpi.com/2072-6643/3/3/341/htm>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5025969/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3384703/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3384703/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6471792/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2892765/>
- Staying Healthy with Nutrition, (21st Century Edition) Part 1 and Part 2, by Elson M. Haas, MD with Buck Levin, PhD, RD



Your Notes

Session Three

Fats:

- Fats are a high energy component of food.
- Fats are not soluble in water.
- For every gram of fats, there is 9 calories – carbohydrates and proteins on provide 4 calories per gram.
- Essential fats should make-up about 10-15% of our body weight.
- Healthy fat range for men and women differ and are different at various ages throughout life.
- Women need a higher percentage of body fat for childbirth.

Saturated vs Unsaturated:

- Saturated fats are solid at room temperature.
- What makes them saturated and solid is that they contain the maximum amount of hydrogen atoms, all with single bonds.
- Most sources of saturated fats are from animal with the exception of coconut oil.
- Unsaturated fats are liquid have hydrogen atoms missing and contain a double bond. Unsaturated fats are from plant sources.
- 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 olive, avocado, canola, sunflower oil, most nuts and high-oleic safflower.
- Monounsaturated is a omega 9, which a higher amount is consumed in the Mediterranean diet.
- Polyunsaturated oils have two categories – omega 3 and omega 6, which are essentials to the body as they are only obtained through diet.

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 hemp, sunflower, walnut, pumpkin seeds and soybean oil.
- Omega 3 sources are fatty fish, flax, chia, and walnut.
- Healthy ratio of omega 3 to 6 is 1:4, 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.

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.

Your Notes

- Fats are needed for the production of hormones.

Classes of Fats:

Triglyceride

- 3-dimensional molecule containing three fatty acids attached to one glycerol molecule – triglyceride.
- If metabolized glycerol can be converted to glucose for either energy or storage.
- Type of fat we store when we eat extra calories.
- 95% of fat in the food we eat & our body are triglycerides

Phospholipid

- Similar to triglycerides, but only two fatty acid chains attached to a glycerol molecule.
- Most common source phosphatidylcholine - lecithin - found in soybeans & egg yolks, also found as sunflower lecithin.
- Two unofficial B vitamins - lipotropic agents (choline & inositol) are phospholipids.
- Helps lower cholesterol by emulsifying fat.
- Structure of all cell membranes.
- Precursors to many neurotransmitters benefiting brain & nervous system function.

Sterols

- Cholesterol - waxy substance, best known sterol; needed to manufacture bile, sex & stress hormones plus it facilitates the production of vitamin D.
- Present in almost all cells
- Two ways to get cholesterol – diet & liver manufactures it.
- Two types of cholesterol - LDL & HDL
- Excessive sugar & trans or bad fats in the diet result in higher LDL cholesterol levels.
- Saturated fats, sugar, alcohol & stress raise LDL levels.
- Exercise, increase omega 3 oils, decreased saturated fat intake can help raise HDL levels.
- Ratio of LDL:HDL - indicates our risk of heart disease.

Myths about Fats:

- The Fat-Free Craze!
- The fat-free craze started in the 80s and is still active today. Fats do perform vital functions in the body, so complete avoidance of fat can contribute to health illnesses.
- After 1980, the low-fat approach became a predominant ideology, promoted by physicians, the federal government, the food industry, and the popular health media. Many subscribed to this ideology of low fat, even though there was no clear evidence that it reduced heart disease or promoted weight loss. In the same decade as the low-fat approach, people were gaining more weight, leading to what many call an obesity epidemic.
<https://academic.oup.com/jhmas/article/63/2/139/772615>

Your Notes

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.
- Trans fats or hydrogenated oils are among the most unhealthy of fats. These oils are modified from their original version in order to increase stability and shelf life, however, they do not absorb well in the body and tend to “compete” with healthy fats, making them a double edged sword. These types of fats are found in pre-packaged and deep fried foods, and are best avoided when possible. Trans fats were banned in Canada in Sept 2018, but they may still be part of the food chain in foods originating in other countries.
- The is the same for omega 6 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 oils are good for the body.

Omega 3 – DHA & EPA:

- Omega 3 oils are the most health promoting of all the fats.
- Omega 3 oils provide EPA & DHA, which help overall cardiovascular and brain function.
- These oils help to reduce inflammation.
- Lowers blood pressure & triglyceride levels.
- Helps improve mental well-being.
- Helps with cognitive and memory factors.
- These oils also play an important role in eye health.

Coconut Oil:

- Currently coconut oil has a bad reputation from the American Heart Association due to being a saturated fat.
- Coconut oil is 90% saturated (compared to butter at 64%), which give it a bad reputation.
- Most research conducted on coconut oil does not consider that the fats are a medium-chain triglyceride, which are less harmful and help raise HDL levels.
- Research also shows that coconut oil (MCT oil) should be a part of a weight loss program and coconut oil in comparison to sunflower oil when used as cooking oil media over a period of 2 years did not change the lipid-related cardiovascular risk factors.
- <https://www.sciencedirect.com/science/article/pii/S0019483215008299>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2874191/>

Fats & Cardiovascular Health:

- There are many organizations that quote, ‘saturated fats cause heart disease’.
- Heart disease is not solely caused by saturated fats. The consumption of rancid and trans fats also play a role, which are a source of unsaturated fats.
- The over consumption of refined carbohydrates, 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.

Your Notes

Fats & Weight:

- Excessive fats in the diet can promote the growth of adipose tissue, but this can also stem from a high consumption of refined sugars, which is stored as glycogen.
- Obesity 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 daily exercise, good quality whole foods and positive mindset.

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.
- Smoke Point of Fats & Oils:

Resources:

- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2719153/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5445635/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3976750/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5793267/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3335257/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2989356/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4808858/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3262608/>
- <https://academic.oup.com/fqs/article/3/2/61/5475954>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3955571/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3955571/>

Your Notes

Session Four

Protein:

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

Protein Sources:

- Egg
- Dairy
- Chicken
- Turkey
- Fish
- Red meat
- Soy
- Quinoa
- Rice
- Grains
- Peas
- Beans & legumes
- Chia seeds
- Hemp
- Nuts & nut butter

Essential vs Non-Essential:

- Out of the 20 amino acids that make-up our body, 9 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 incomplete and we would need to complement that food with another high in the missing essential amino acids.

Different Eating Styles:

- Omnivorous
- Vegetarian
- Lacto / ovo
- Vegan

Why Protein is Important?

- Protein can be used for energy if the diet is low in carbohydrates or fats.
- Protein is needed for growth and maintenance 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.

Your Notes

Reducing Meat Consumption:

- It is estimated that by 2030 the world's population will reach 8.5 billion, with 1.4 billion being over 60 years old. This creates challenges to the food-supply system that will need to meet the nutritional needs of both an aging and expanding population.
- Exploring alternative protein sources and adopting a more sustainable, plant-based diets has its benefits.
- According to the Food and Agriculture's definition, a sustainable diet has "low environmental impacts which contribute to food and nutrition security and to healthy life. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy, while optimizing natural and human resources".
- It is documented that plant-based diets can lower the risk of diabetes, cardiovascular diseases, hypertension, obesity, metabolic syndrome, and mortality, as well as reduce specific types of cancer.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5872778/>

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.
- Protein Needs:

Current dietary recommendations for protein are focused on total daily intake of 0.8 g/kg body weight.

Minimum to Maximum Needs:

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

Digestion of Protein:

- Protein digestion begins in the stomach, where the acidic environment favors protein denaturation.
- Pepsin is an enzyme that helps protein digestion and they require an acidic environment with a pH between 1.8 and 3.5 to work.
- Many people assume that it is gastric acid or HCl that digests protein, but the role of HCl in protein digestion is that it activates pepsinogen into pepsin.

Your Notes

- HCl levels are important as without it, pepsinogen would not be converted to pepsin and protein would not be broken down to the amino acids needed for our body processes and health.

How Protein Affects Appetite?

- In Western lifestyles, the daily pattern of dietary protein ingestion is the lowest amount of protein being consumed in the morning and the greatest in the evening meal.
- It is important to understand that hunger and appetite are nonsynonymous terms. Hunger is defined as a physical 'need to eat', while appetite is a 'desire to eat'.
- Research shows that high protein meals create satiety, so starting the day with higher protein meal can promote feelings of fullness and reduce hunger throughout the day.
- <https://optimisingnutrition.com/2018/10/09/calculating-satiety/>

Resources:

- <https://www.ncbi.nlm.nih.gov/books/NBK22600/>
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- <https://pubmed.ncbi.nlm.nih.gov/23107521/>
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- <https://nutritionandmetabolism.biomedcentral.com/articles/10.1186/1743-7075-11-53>
- https://www.researchgate.net/publication/326497608_Quality_of_Chicken_Meat
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- <https://www.nature.com/articles/s41398-019-0552-0>

Your Notes

Session Five

Vitamins & Minerals:

- Both vitamins and minerals 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 plant and animal sources.
- Most vitamins are essential and need to be supplied from the diet, except for some B vitamins and vitamin K that are synthesized by our gut bacteria.
- Vitamins are categorized as fat-soluble or water-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:

- Growth
- Immunity
- Aids digestion and elimination
- Vitality
- And overall health
- 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 defense. It is also needed for growth and development.

Foods rich in vitamin A:

- Egg yolks
- Butter / cheese
- Carotenoids – pigment of fruits & vegetables
- 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.

Foods rich in B vitamins:

- Whole grains – brown rice / legumes
- Kelp / seaweed
- Nutritional yeast
- Avocados
- Eggs, salmon and leafy greens
- Vitamin C

Your Notes

- 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.

Foods rich in vitamin C:

- Bell peppers
- Citrus / kiwi
- Cherries / berries
- Sprouts

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.

Foods rich in vitamin D:

- Fish oils
- Egg yolks
- Butter
- Sunshine

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.

Foods rich in Vitamin E:

- Wheat germ oil
- Butter
- Egg yolk
- Whole grains
- Nuts & seeds

Interesting Fact:

- Vitamin E was first used as a supplement in Canada by the physicians Shute and Shute; based on the positive results it achieved, they began using it regularly in their practices. Since then, well-designed experimental and clinical studies have progressed steadily and increased our knowledge of vitamin E.
- The anti-oxidative properties of vitamin E have been found to play a vital role in the battle against various diseases such as atherosclerosis, oxidative stress, cancer, cataract and AD, among others.
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3997530/>

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

Your Notes

Foods rich in Vitamin K

- Most green plants, especially dark leafy greens
- Alfalfa
- Kelp & Fermented foods
- 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.

Foods rich in calcium:

- Dairy – hard cheese / yogurt
- Broccoli
- Collards
- Kelp
- Almonds / sunflower / sesame seeds
- Bone broth

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

Foods rich in magnesium:

- Whole grains / legumes
- Dark green vegetables – spinach
- Nuts & seeds
- Avocado

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.

Foods rich in Potassium:

- Avocados
- Fish
- Leafy greens
- Bananas / apricots
- Asparagus

Your Notes

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

Foods rich in sulfur:

- Eggs / legumes / seafood
- Garlic / onion / brassica vegetables

Chromium

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

Foods rich in chromium:

- Brewer's yeast
- Black pepper
- Whole wheat / rye
- Beef / eggs / chicken
- Potatoes
- Spinach

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.

Food high in selenium are:

- Brazil nuts
- Sunflower seeds
- Seafood / meat
- Dairy products
-

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.

Food sources:

- Seafood / seaweed
- Food grown in soil rich in iodine

Your Notes

Iron:

- Iron is needed for the synthesis of hemoglobin, which is responsible for transporting oxygen from the lung to the body 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.

Food rich in iron:

- Red meat
- Dried fruit
- Spinach

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.

Food rich in manganese:

- Whole grains / legumes / pumpkin
- Seeds – hemp / chia
- Pecans / hazelnuts
- Clams / oysters / mussels

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.

Foods rich in zinc:

- Pumpkin seeds / sunflower seeds / hemp seeds
- Pecans / Brazil nuts
- Oats / rye
- Clams / oysters
- Herring / fish / shellfish

Your Notes

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- <https://ods.od.nih.gov/factsheets/>
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Your Notes

Session Six

Phytonutrients:

- Phytonutrients are also known as phytochemicals, which are chemical compounds produced by plants.
- Some resources state that phytonutrients are not essential to health like vitamins & minerals, 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 colorful fruits and vegetables, legumes, nuts & seeds, tea, whole grains, and many spices & herbs.
- Phytonutrients give plants their colour or pigment, which are a source of antioxidants 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 & hormone metabolism.
- Phytonutrients:
- 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:

- Antimicrobial
- Antioxidant & anti-inflammatory
- Anti-allergic & antihistamine
- Anti-spasmodic
- Anti-cancer
- Anti-aging
- Hepatoprotective
- Lowers cholesterol levels
- Neuroprotective
- Lowers blood pressure
- Analgesic
- Protects from UVB-induced carcinogenesis
- Immuno-modulator

Polyphenols & Flavonoids:

- Polyphenols and flavonoids are secondary plant metabolites present in fruits & vegetables, coffee beans & tea leaves, chocolates, grains & legumes, red wine & so on.
- Intake of flavonoids is found to be associated with a wide range of health benefits which includes antioxidant potential and reduced risk of cardiovascular disease.

Your Notes

- Green tea flavonoids as insulin mimetics. Diabetes mellitus is a metabolism disorder where glucose cannot enter the cells due to deficiency or dysregulation of insulin. Studies suggested that epicatechin acts as an insulin receptor activator and reduces the harmful effects of diabetes.
- Polyphenols reduce insulin resistance.

Antioxidants:

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

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.
- Curcumin was shown to reduce the expression of inflammatory cytokines.

Polyphenols & Immunity:

- Polyphenol intake is associated with a direct change in the count and differentiation of specific immune 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 healthy aging 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 cognitive function in older adults.

Your Notes

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

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 food 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 enzymes or by the gut microflora.
- Beneficial bacteria help degrade and process polyphenols. Our gut flora help increase the bioavailability of these key phytonutrients needed for overall health.

Resources:

- <https://www.sciencedirect.com/topics/food-science/phytonutrients>
- <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/phytochemical>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5465813/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5055983/>
- <https://onlinelibrary.wiley.com/doi/full/10.1111/1750-3841.12101>
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Your Notes

Session Seven

Immunity:

- Depending on the resource, immunity has different meanings.
- Generally, it means the resistance of a disease or pathogen by the body. Immunity is the action of the immune system.
- This definition needs to go a bit deeper as it is not only the action of the immune system, but the health of the entire body works together that supports overall immunity.
- The immune system works synergistic with the lymphatic system, which works with the circulatory system.
- Research shows the 70% of the immune system surrounds the GI Tract – GALT, so immunity also includes the digestive and intestinal systems.
- The thymus is the master gland of the body's immune function, which is part of the endocrine system.
- The immune system consists of the thymus, lymph nodes, spleen, and an entire vessel system.

How the Immune System Works:

What is Inflammation?

- The body's natural response to injury, irritation, or infection
- Inflammation is known as "an internal fire"
- If you stepped on a rusty nail & you did not have a natural inflammatory process, what would happen?
- Chronic inflammation generates a surplus of free radicals which damage body tissues, damage DNA, age us, & contribute too 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.
- Inflammatory Process is a Normal Process

Functions of the inflammatory response:

- Reduces the spread of damaging agents
- Disposes of cell debris & pathogens through phagocytosis
- Sets the stage for repair

- Inflammation is beneficial as this process helps to neutralize harmful microorganisms, helps to repair a wound, & cleans up the debris resulting from an injury

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

Your Notes

Where does Inflammation Begin?

- Inflammation is an immune response, which tries to protect the body.
- How & where inflammation begins would be through an exposure to a toxin, food or microorganism that is creating an immune response.
- GALT – the gut lining is permeable
- If partially undigested foods (not chewing properly), toxins or allergens pass through the intestinal lining into
- the blood: immune cells attack these foreign invaders, leading to an allergic response & inflammation

What Contributes to Inflammation?

- SAD diet
- Infection
- Physical injuries
- Allergies & food sensitivities
- Drugs – misuse of antibiotics
- Fat cells
- Chronic stress
- Insomnia & poor sleep habits
- Environmental toxins
- Smoking

How Chronic Stress Contributes to Inflammation?

- All stress creates an inflammatory state caused by an over-production of pro-inflammatory agents in the body
- Stress & the gut connection relates to both fight-or-flight / rest & digest, which contributes to poor digestion & the inflammatory response
- Stress also creates issues with the permeability of the intestinal lining, raised cortisol levels affect the intestinal lining & causing it to become more permeable = leaky gut & allergies
- All relate to more inflammation in the body!

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

Inflammation & Obesity:

- Another factor in systemic, chronic inflammation is fat cells, especially around the abdomen – belly fat
- Obesity was known as a fat deposit disease; now research shows that obesity is a low-grade chronic & systemic inflammatory disease
- Excess weight contributes to inflammation because fat cells secrete chemicals, such as C-reactive protein and interleukin-6, that promote inflammation
- Visceral fat produces a large amount of inflammatory cytokines

Your Notes

- Obesity creates a higher risk factor of developing insulin resistance, which contributes to a higher risk of heart disease such as high cholesterol, HPB, heart attack & stroke

Inflammation & Heart Disease:

- The role of inflammation & oxidant stress contributing to the development of heart disease is evident
- Repeated injury from oxidative stress & free radicals trigger an ongoing inflammatory response, which over time, contributes to the build-up of plaque in the arteries aiding the development of atherosclerosis
- Any type of rupture in this plaque forms a thrombosis (clot), which can create a high risk of having a myocardial infarction (heart attack) or stroke

Inflammation Needs to be Addressed at the Root:

- The fact that your immune system drives the inflammatory process in disease is well established.
- Western medicine offers little in the way of actual answers in dealing with illnesses promoted by inflammation.
- The typical approach is to suppress the immune response with immune suppressive agents or steroids.
- Both approaches are designed to reduce inflammation but neither stop the underlying contributor to disease nor allow for damaged tissues to regenerate.
- Unless you turn off the actual cause of inflammation, all that is done is delay the inevitable & potentially destroy more body processes (healthy immune function).

Anti-Inflammatory & Immune Supporting Nutrients

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

Immune Supporting Foods:

- Dark Green Vegetables – kale / spinach / beet greens
- Bright Vegetables – beets / carrots / purple cabbage
- Fruit – all types of berries / cherries / apple / peach / apricot / oranges / pineapple / pomegranates
- Fatty fish
- Eggs
- Avocados
- Flax / chia / hemp seeds

Lifestyle Suggestions

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

Your Notes

- Lymph massage
- Positive Mindset – laughter / smile / give gratitude
- Stop smoking
- Reduce exposure to chemicals – natural cleaning products
- Natural body care products

Resources

- Inflammation: A Common Denominator of Disease – by Raymond Francis BSc, RN. Arizona Center for Advanced Medicine 2014
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Your Notes

Session Eight

What is Detoxification?

- The process of clearing toxins from the body; neutralizing & transforming toxins in preparation for elimination; and clearing excess mucus and congestion
- Detoxification is a relative term. Anything that supports elimination can be said to help us detoxify.
- Sources of Toxins
- External toxins come from diet, drug use, and environmental exposure
- Internal toxins include oxidized fats, free radicals, and other irritating molecules
- Poor digestion; colon sluggishness & dysfunction; reduced liver function; and poor elimination through the kidneys, respiratory tract, and skin add to increased toxicity

Why Should We Detox?

- The obvious reason – to clean and remove toxins from our bodies
- To increase health, vitality, and rejuvenation
- To clear symptoms, address illness, and reduce any future problems
- To rest or repair the digestive system
- To help re-evaluate our lives, make changes, or clear abuses and addictions
- To regain bodily homeostasis
- Can be helpful for weight loss, but this is not detoxification's primary purpose
- Detoxification is the first step towards creating a healthy body!

Benefits of Detoxification

- To help:
- Reduce disease
- Reduce symptoms
- Cleanse the body
- Rest organs
- Purification
- To Be More:
- Organized
- Creative
- Motivated
- Productive
- Relaxed
- Energetic

Who Should Detoxify?

- Almost everyone needs to detox, cleanse themselves, and rest their body functions at times
- Based on individual lifestyle and needs, which provide clues for deciding how and when to detoxify

When Should You Detoxify?

- Spring is a key time for detoxification – fall is also important
- When you feel congested or experience symptoms of toxicity
- In preparation for conception (both men and women)
- Anytime you feel you need to regain bodily homeostasis

Your Notes

Symptoms of Toxicity

- Headache
- Fatigue
- Mucus problems
- Aches and pains
- Digestive problems
- Obesity
- “Allergy” symptoms
- Sensitivity to environmental agents like chemicals, perfumes, and synthetics

The Body’s General Detoxification Systems

- Gastrointestinal
- Liver, gallbladder, colon, and the whole GI tract
- Urinary
- Kidneys, bladder, and urethra
- Respiratory
- Lungs, bronchial tubes, throat, sinuses, and nose
- Lymphatic
- Lymph channels and lymph nodes
- Skin and dermal (the largest organ of detoxification)
 - Sweat and sebaceous glands

The Importance of the Digestive System for Detoxification

- The digestive tube is one of 3 major organs that are in contact with the outside world (skin, lungs, gut)
- Intestinal Walls & Detoxification
- Keep foreign particles out (undigested food/microorganisms) while letting in whatever the body needs (digested food)
- Export metabolic/toxic waste outside body
- Inefficiencies in the intestinal walls
- Gut Associated Lymphatic Tissue (GALT) & Detoxification
- Constantly scans for foreign & hostile organisms and molecules & eliminates these threats
- Back-up plan for the Intestinal Wall
- Intestinal Flora & Detoxification
- First line of defense in the digestive tube
- Help regulate the immune system
- Digest part of our food
- Remove 40% of toxins in food
- Reduces viruses, parasites, yeast and pathogenic bacteria from taking root in digestive system
- Health problems associated with gut imbalances
- Systemic inflammation
- Cardiovascular imbalances
- Uncontrolled cell division
- Depression
- Allergies
- Immune dysfunction (attacking itself)
- Infertility

Your Notes

The Mighty Liver – our most important organ of detoxification

- 4 methods of identifying, neutralizing, and sending toxic substances out of the body
 - Filtering the blood
 - Bile excretion
 - Phase I detoxification
 - Phase II detoxification

1. Filtering the Blood

- 4 liters of blood passes through the liver each minute for detoxification
- A healthy liver will filter out over 90% of toxins during this first stage
- Most of these toxins are then funneled into bile for excretion

2. Bile Excretion

- The liver produces approximately 2 liters of bile every day
- Bile is used as a transport vehicle for carrying and dumping toxic substances into the intestines
- The toxin laden bile is then eliminated through the stool

3. Phase I Detoxification

- Toxins, chemicals, and heavy metals are converted into less harmful chemicals through many chemical reactions
- Ways to Detoxify
- Repairing the digestive system
- Making simple changes to your diet and lifestyle
- Raw juice cleansing
- Fasting
- Boxed detoxification kits

4. Phase II Detoxification

- The liver converts fat-soluble toxins to water soluble so they can be passed out through body fluids such as bile or urine

Release Toxins Slowly

- It is important to release toxins slowly so your body can keep up with elimination
- Releasing toxins too quickly can make you sick and stress your systems of detoxification
- Choose a detoxification protocol that fits your current health and lifestyle - avoid jumping in with both feet!

Food for Gentle Detoxification

- Water (filtered)
 - The most important substance for any detoxification protocol
- Fibre
 - Soluble fibre binds to excess hormones and toxins for removal through the colon
 - Insoluble fibre scrapes the small intestine and colon clean
 - Sources: ground flax seed, chia seed, berries, raw fruits and vegetables, nuts & seeds, and whole grains (gluten-free)
- Lemons – the master cleanser
- Leafy greens - arugula

Your Notes

- Bitters – liver support
 - Dandelion leaf, mustard greens, nettles, artichoke, ginger
- Fresh vegetable and fruit juices
- Organically grown or chemical-free fruits and vegetables
- Apples contain pectin which helps to bind and excrete heavy metals right off the intestines.
- Beets, carrots, red onions, and eggplant contain flavonoids and beta-carotene which are antioxidants.
- Garlic contains allicin and the mineral selenium, both antioxidants. It assists the removal of heavy metals from the liver.
- Eggs, brown rice and whole grains, broccoli and spinach contain B-complex vitamins which improve liver function and promote liver decongestion.
- Cruciferous vegetables such as cauliflower, broccoli, cabbage, Brussels sprouts, Bok Choy, kale, radishes, and turnips contain glucosinolates which help the liver produce enzymes for detoxification.
- Grapefruits are rich in antioxidants and help in natural detoxification of the liver.

Dangers and Contraindications of Detoxification

- Any serious drug detoxification should be done with conscious and informed management of the detox process by an experienced practitioner
- Excess cleansing should be avoided as nutrient deficiencies can result
- Releasing too much toxicity can make people sicker; if this happens, increase fluids, and eat normally again until you feel better
- Dangers and Contraindications of Detoxification
- Avoid fasting just before surgery and wait 4 – 6 weeks after surgery (follow your ND or MD's recommendations)
- Do not detoxify while pregnant or breastfeeding
- Cancer patients should only detoxify under the supervision of a qualified health care practitioner
- If you have a debilitating disease, diabetes, eating disorder, hyperglycemia, underweight, or are taking any medications, do not undergo any type of detoxification without proper consultation with a qualified health practitioner

Resources:

- <https://onlinelibrary.wiley.com/doi/abs/10.1111/jhn.12286>
- <https://onlinelibrary.wiley.com/doi/abs/10.1007/BF01797915?sid=nlm%3Apubmed>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4488002/>
- <https://www.hindawi.com/journals/ecam/2015/824185/>
- https://www.researchgate.net/profile/Deann_Liska/publication/13653312_The_Detoxification_Enzyme_System/links/0c960533ac925146f2000000/The-Detoxification-Enzyme-System.pdf

Your Notes

Session Nine

Whole Foods Kitchen:

- Eating whole, natural foods compared to processed, refined foods.
- Being mindful to what you eat.
- Not just to honor your taste buds, but to educate yourself to the power of good quality, natural foods.
- To be healthy and sustainable.

Benefits of Homemade:

- Saves money
- Healthier ingredients
- Brings family together
- Portion control
- Enjoyment
- Can be creative with meals
- Can control any allergens

What's in Your Pantry?

Some basics that should be in your pantry are:

- Oils & vinegars
- Canned goods – for those times that you do not have access to fresh – legumes / tomatoes / coconut milk
- Whole grains – brown/wild rice / quinoa / oats / whole wheat / whole grain pastes
- Dried legumes – make sure to soak & cook properly
- Baking goods – whole grain flours / cocoa / honey / brown sugar / baking soda / baking powder
- Onions / potatoes
- Dried fruit
- Nuts & seeds - if raw, store in the fridge
- Pickled or ferments products
- Sea salt

Ingredients:

- The more predominant ingredient in the product is listed first – to the smallest
- Labels do not contain all information
- Look for products with less ingredients – why?
- One Ingredient = Whole Food

Labels

- Labels can be Misleading

Meal Prep:

- Whole foods meals do not have to be complicated or time consuming.
- Meals can be light and healthy.

Your Notes

Meal prep tips:

- Schedule and plan meals
- Keep it simple
- Quality storage containers - glass
- Shopping list
- Batch cooking
- Mason Jars!

There are so many ideas for mason jar meals!

- Chia pudding
- Salads
- Noodles
- Fruit or veggies
- Rice & beans
- Oats

Culinary Herbs:

These are so many benefits of using fresh herbs to cook with:

- Taste
- Nutritious
- Antioxidants
- Anti-inflammatory
- Polyphenols

Fresh herbs can be grown in a sunny window and used year-round

- Garlic
- Dill
- Rosemary
- Basil
- Thyme
- Sage
- Tarragon
- Oregano
- Parsley
- Chive
- Cilantro
- Bay leaves
- Mint
- Ginger

Method of Cooking:

- Baking
- Steaming
- Grilling
- Poaching
- Sautéed
- Pan-fried
- Braising
- Stewing
- Roasting
- Boiling
- Deep-frying

Your Notes

Cookware:

- A recent study by the Environmental Working Group (EWG) in the U.S. found 232 toxic chemicals in the umbilical cord blood of 10 babies from ethnic minority groups. Since 1995, EWG's body burden testing has found 553 different industrial chemicals, pollutants and pesticides in 149 Americans across 27 different states.

Here in Canada, Environmental Defence released a report in 2013 that involved testing the umbilical cord blood of a small group of newborns for the presence of 310 different synthetic chemicals, which 137 of these chemicals were things such as DDT, PCBs and flame retardant. This report demonstrated that Canadian children are born pre-polluted.

More research in this area needs to happen for the connection between these types of chemicals and serious health issues like cancer to be made.

Reducing EDCs:

- Man-made chemicals can interfere or mimic the body's hormones.
- These are called endocrine disruptors, which these chemicals are linked with developmental, reproductive, brain, & immune problems.
- Endocrine disruptors are found in everyday products, including some plastic bottles and containers, liners of metal food cans, detergents, flame retardants, food, toys, cosmetics, and pesticides.
- How can we reduce our exposure to these chemicals?

Pollutants in the Home:

- Indoor pollutants are an important topic, in some cases the air quality outside is better than in our house.

Some indoor pollutants are:

- Paint, glue, adhesives, plastics, smoke, dust, cleaning fluids and much more

Resources:

- <https://www.ewg.org/foodnews/dirty-dozen.php>
- <https://www.niehs.nih.gov/health/topics/agents/endocrine/index.cfm>
- <https://toxtown.nlm.nih.gov/chemicals-and-contaminants/endocrine-disruptors>
- <http://www.eatingwell.com/article/37009/how-to-stock-your-pantry/>
- <https://www.loveandoliveoil.com/2018/02/pantry-essentials.html>
- <https://www.ewg.org/research/dirty-dozen-list-endocrine-disruptors>

Your Notes

Session Ten

What is Stress?

- Stress is a response to a stimulus that the mind and body perceive as dangerous.
- Stress is a normal response that involves brain chemicals that produce a 'fight or flight' reaction, so we can remove ourselves from danger.
- Stress is an individual response as the stimulus can be external or internal. Our thoughts and emotions can even sound the alarm of the stress response.
- Everyone deals with stress on some level.

Sources of Stress:

- Stress can be physical, emotional, and mental.
- Stress is subjective, meaning that what causes stress in one person may not cause stress in another; or something may cause different degrees of stress depending on one's current resilience.

Some sources of stress are:

- Pressure from work, school or home life
- Financial
- Physical – car accident / assault / illness
- Daily responsibilities
- Death of a loved one / divorce

Not All Stress is Bad:

- A low to moderate amount of stress can be ok as this keeps us motivated and on task in our daily lives.
- Even joyous occasions can trigger the stress response.
- When stress becomes chronic, health issues arise.
- Long-term stress is more constant than acute stress.

Stress & Sleep:

- Stress and anxiety may cause sleeping problems or make existing problems worse and having an anxiety disorder exacerbates the problem.
- Sleep disorders are characterized by abnormal sleep patterns that interfere with physical, mental, and emotional functioning. Stress or anxiety can cause a serious night without sleep, as do a variety of other problems.
- According to the National Institutes of Health, more than 40 million people in North America suffer from chronic, long-term sleep disorders, and an additional 20 million report occasional sleeping problems.

Sleep Deprivation

- Sleep deprivation is the condition of not having enough sleep, which can be either acute or chronic.
- Self-imposed sleep deprivation happens from social, academic or employment obligations plus other stressors, which if only on occasion, will not lead to serious health effects.
- Adults & children delay sleep or curtail the sleep period deliberately by extending time at work, completing homework assignments, and

Your Notes

participating in computer/web-based activities. Others lose sleep due to insomnia, apnea or medical conditions that interfere with sleep

- Research shows that insomnia and chronic lack of sleep does contribute to negative health effects.

Sleep Deprived?

- Yawning
- Fatigue
- Irritability & depressed mood
- Difficulty learning new concepts
- Forgetfulness & inability to concentrate
- Lack of motivation
- Clumsiness
- Increased appetite - carbohydrate cravings
- Reduced sex drive

Circadian Rhythm

- Many human physical functions follow a daily rhythm, or a 24-hour cycle called circadian rhythms.
- Sleeping, waking, digestion, secretion of adrenalin, body temperature, blood pressure, pulse and many other important aspects of body functions and human behaviour are regulated by this 24-hour cycle.
- These rhythmical processes are coordinated to allow for high activity during the day and low activity at night.
- The body uses cues from its processes and the environment such as clock time, social activities, the light/dark cycle, and mealtimes to keep the various rhythms on track.
- Shift work, and specifically night shift is one of the most frequent reasons for the disruption of circadian rhythms, causing significant alterations of sleep and biological functions.

Shift Work

- Shiftwork is a reality for about 25% of the North American working population.

Alternating day, night and afternoon shifts are common in:

- Industrial work
- Customs & immigration
- Hospitals & other health care
- 1st responders - police, fire, ambulance
- Hospitality
- Transportation services - trucking, airlines
- The International Agency for Research on Cancer (IARC) has concluded that "shiftwork that involves circadian disruption" is considered a Group 2A carcinogen and "probably carcinogenic to humans."

Health Effects of Shift Work

- Gastrointestinal and digestive problems such as indigestion, heartburn, stomachache and loss of appetite are more common among rotating shift workers and night workers.
- Shiftwork is not directly linked to CVD, but heart rate and blood pressure have been shown to follow a circadian rhythm, which can increase the risk of developing CVD.

Your Notes

- Recently, a syndrome called “shift work disorder” has been identified by the presence of the following symptoms: alteration of circadian rhythm of sleep/wake, insomnia, excessive day sleepiness, and fatigue.
- Sleep, Obesity & Leptin Levels
- Health-related choices made by adults in a preliminary study, were also affected by previous nights’ sleep.
- Adults reporting problems with sleep were more likely to eat restaurant-prepared or fast-food rather than food made at home.
- Overtime, people with restricted sleep have weight or health problems related to their food choices.
- Given the irregularity in type and timing of meals, it is not surprising that the night worker is more likely to have a poorer diet.

Sleep, Obesity & Leptin Levels

- At night, the loss of appetite leads to increased snacking on junk food rather than eating a full, well-balanced meal.
- Feelings of fatigue may encourage the consumption of beverages with caffeine (coffee, cola) to help the worker stay awake.
- Sleep loss affects the body’s ability to store energy and control its availability.
- Sleep restricted for five days has been shown to result in a 40% slower insulin response and a reduction in the acute insulin response to glucose by 30%.
- Ghrelin, a hormone that stimulates appetite and Leptin, a hormone that inhibits appetite, are both involved in energy regulation and food intake.
- After two nights of sleep limited to 4h in bed Ghrelin is increased by 28% and Leptin is decreased by 18% and appetites for high calorie foods is increased.

Sleep Tips

- Don’t go to bed unless you are sleepy and if you don’t fall asleep after 20 minutes, get out of bed.
- Establish a relaxing bedtime routine.
- Make your bedroom quiet and relaxing. Keep the room at a cooler temperature.
- Limit exposure to blue light in the evenings. Turn off electronic devices at least 30 minutes before bedtime. There is a difference between red light and blue light. Light Therapy can help.
- Do not eat a large meal before bedtime. If you are hungry at night, eat a light snack.
- Exercise regularly and maintain a healthy whole foods diet.
- Avoid consuming caffeine, alcohol, and other stimulating beverages late afternoon or before bed.
- Reduce your fluid intake before bedtime.

Melatonin:

- Melatonin is a hormone produced by the pineal gland.
- It was first identified in the late 1950s.
- It acts as a free radical scavenger and an antioxidant.
- It is more effective than vitamin E and is about 5x more efficient a scavenger than glutathione.
- The circadian rhythm of melatonin is responsible for modifying habitual sleep patterns.

Your Notes

- Taken as a supplement, melatonin is eliminated from the body within 3–4 hrs.

Other Recommendations:

- Nuts are a good source of healthy fats, almonds and walnuts, specifically, contain melatonin.
- Foods high in lean protein are packed with the amino acid tryptophan, which may increase serotonin levels.
- Chamomile, ginger, and peppermint tea are calming choices for bedtime.
- Certain fruits that contain melatonin can help you fall asleep faster and wake up less often during the night. Tart cherry juice and whole tart cherries contain a lot of melatonin, and bananas, pineapple, and oranges are also sources.
- Relax with an Epsom bath to supply magnesium to aid sleep.
- Nutrients to support adrenal glands

Stress Management:

- Get regular exercise. Just 30 minutes per day of walking can help boost your mood and improve your health.
- Try a relaxing activity. Explore relaxation or wellness programs, which may incorporate meditation, muscle relaxation, or breathing exercises.
- Set goals and priorities. Decide what must get done now and what can wait. Learn to say “no” to new tasks if you start to feel like you’re taking on too much. Try to be mindful of what you have accomplished at the end of the day, not what you have been unable to do.
- Stay connected. Stay in touch with people who can provide emotional support and practical help. To reduce stress, ask for help from friends, family, and community.
- Talk to your health care provider or a health professional.

Resources:

- <https://www.babysleepstudy.org/optimizing-emotion-regulation>
- <https://www.sleepfoundation.org/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5028173/>
- <https://www.ccohs.ca/oshanswers/ergonomics/shiftwrk.html>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4608917/>
- <http://sleepandhypnosis.org/ing/Pdf/f09e5023d1ec4c9a89e188b63e4dc4b5.pdf>
- <http://www.pnas.org/content/106/11/4453.short>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5579396/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5137920/>
- <https://www.nimh.nih.gov/health/publications/stress/index.shtml>
- <https://www.health.harvard.edu/staying-healthy/blue-light-has-a-dark-side>
- <https://www.nature.com/articles/6702597.pdf>

Your Notes

