

CHEFS!

THEME 4: All About Nutrients



CHEFS!

THEME 4: All About Nutrients

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Vitamins, Minerals, and Digestion



Session 1:

The Big Four – Lesson Plan

Objectives:

- Chefs learn about the macronutrients in food: carbohydrates, fats, protein, and water.
- Chefs are able to use their knowledge about nutrients to create balanced meals.

RESOURCES	DISCUSSIONS & ACTIVITIES	TIME (MINUTES)
The Big Four	Lead a discussion which focuses on the four macronutrients: carbohydrates, fats, protein, and water. You do not need to be an expert, just read The Big Four resource and you will have all of the information you need to share. Before you begin, ask the children if they have heard of these terms before, what they've heard about them, and if they can think of some foods which are good sources of these nutrients. <i>essential</i>	20
Teaming Up	This interactive activity allows the children to form teams based on their knowledge of the macronutrients. <i>essential</i>	5
Balancing Act	Use this activity to reinforce the knowledge gained in The Big Four discussion. The children will also need to incorporate their knowledge of WHOA foods. <i>essential</i>	25
Testing For Fat	An easy experiment to find invisible fat in food. <i>optional</i>	15

Try one of these recipes (40 mins):

- Baked Apples
- Pumpkin Muffins

TEACHING MOMENT:

“Why?” is one of the most important questions we can ask ourselves when trying to understand new concepts. Encourage the children to ask this of you, each other, and themselves when they are learning.

It's a Fact! There was a time when pumpkin was recommended for removing freckles. It might not do that very well, but it can provide you with a satisfying snack. Next time you carve a pumpkin, save the seeds from the inside, wash them and roast them on a baking sheet in the oven.





Session 1:

The Big Four – Resources

What are Macronutrients?

What are macronutrients? Food is mainly composed of four different nutrients: carbohydrates, fats, protein, and water. These are called macronutrients (macro = large) because our bodies need large amounts of these nutrients to function and thrive. Whereas micronutrients, like vitamins and minerals, are needed in very small amounts.

Where are macronutrients found? Foods contain a mixture of these macronutrients, however many foods contain mostly one of the four (see below for examples). Water is found in all foods, but the foods which contain the most water are low-calorie foods like fruits and vegetables.

Macronutrient	Food Sources
Carbohydrates	Grains, potatoes, corn, sweet potatoes, fruits, milk, milk products, and milk alternatives. A small amount of carbohydrates is present in other vegetables.
Fats	Oils, nuts, butter, margarine, bacon
Protein	Lean meat and poultry, fish, soy, legumes (beans, lentils, etc.)

These are general guidelines and many foods are good sources of more than one macronutrient. For example, milk contains carbohydrates, protein, and fats. Nuts contain healthy fats and are a good source of protein.

What are macronutrients good for? Carbohydrates, fats, and protein all contribute energy in the form of calories to our bodies. Fats are the most energy-rich of the three, this is one of the main reasons why we limit foods in our diet that are high in fat.

Macronutrient	Calories/gram
Carbohydrates	4
Fats	9
Protein	4

Session 1:

The Big Four – Resources

What are Macronutrients?

Carbohydrates provide the largest percentage of energy that we use when we are being active, also they are the only source of energy which feeds the brain. This is one reason why it is important for both children and adults to eat a nourishing breakfast. Foods that are good sources of carbohydrates are often good sources of fibre, too (except very sugary foods, like candies and juice). Fibre is the stuff in plant foods that our bodies can't break down, but it does prevent constipation. Foods which are good sources of carbohydrates can be found in the Fruit and Vegetables, Grain Products, and Milk and Alternatives food groups on Canada's Food Guide.

Fats are also used for energy, but we primarily use energy from fat when we are performing low-energy activities, like sitting, walking leisurely, or playing video games. We also need fat in our diets to help us absorb some of the vitamins in our foods (you will learn more about this in the next session).

Protein does double duty by providing calories, but, most importantly, it maintains normal body function and provides the building blocks for growth and development. It is, therefore, important for children to eat a diet with adequate protein. This can be accomplished through eating healthy, balanced meals which include foods from the Meat and Alternatives section of Canada's Food Guide.

Water is so essential to our bodies that we would not live for very long, if we didn't have it. Fortunately, water is everywhere! Water is found in all of the foods we eat and beverages we drink. Of course, you can always drink water by itself. Water's job is big; it performs a range of functions, from carrying the nutrients around in our body, to helping us breathe, to helping us keep a normal body temperature.





Session 1:

The Big Four – Resources

What are Macronutrients?

How much of these macronutrients do we need? Current recommendations for how much to consume of The Big Four are incorporated into Canada's Food Guide. There is no need for calculators or formulas. Eating a balanced diet based on the recommended number and size of servings from all four food groups will provide exactly what you need.

To get enough water, be sure to choose fresh fruits and vegetables often, and choose milk and water as a drink. Fruit juice does contain some good nutrients, but it is also high in sugar so choose it less often.

What does this have to do with healthy eating? These macronutrients work best in our bodies when they are eaten together at meal time. Balanced meals include all of the macronutrients. The best way to ensure that all of the macronutrients are in your meals is to eat foods from at least 3 of the 4 food groups at meal time. It is still important to remember what you learned about the GO, SLOW, and WHOA foods. Here are some guidelines for choosing the best sources of The Big Four:

Carbohydrates

- Choose whole grains more often than refined grains (eg. brown rice, whole wheat bread, oats, whole wheat pasta, etc.).
- Sources of carbohydrates, like candy, cookies, pop, and sugary cereals that contain added sugar or no other nutrients, are WHOA foods because, over time, they can harm your body and give you cavities in your teeth.

Fats

- Choose oils or soft margarine more often than solid fats like butter or shortening.
- Naturally-occurring fats found in nuts, seeds, and fatty fish (like salmon) are very healthy fats and these foods are also good sources of protein.
- Fats that are present in fried foods, baked goods (especially if they are not homemade), and meats that are not lean (meaning the fat has not been removed), can hurt your heart over time.

Protein

- Choose protein sources that are low in saturated (solid at room temperature) fats. Think extra lean ground beef, skinless chicken, beans, lentils, and chickpeas, nuts and nut butters, and low-fat milk or milk alternatives.

Session 1:

The Big Four – Resources

Macronutrient Team sign packages

Objective: Children apply their knowledge of carbohydrates, fats, and proteins to form teams by association.

Materials/Resources:

- Macronutrient Team sign packages (included)

Note: This activity is designed for a group of up to 18 participants. For a very small group, you may wish to modify this activity by asking the children to work together to match the signs to the right macronutrient. If your group has 12-15 participants, assign only one or two food signs to each team. If your group is larger than 18, you may assign multiple copies of a sign to each group.

Instructions: After you have lead a discussion about macronutrients using The Big Four resource, provide each child with a sign. Explain to the children that they are already part of a team, but they must use these signs to find the other members of their team. The children will need to hold their signs in a way that is visible to their fellow Chefs! and search around the room until their team is complete. For example, when the child with the Energy sign meets the child with the Carbohydrates sign, they stick together until the team is complete. You will know how many members there will be on each team (based on the total number of participants and the available signs) and can let the children know that they are done searching when their team has the correct number of members. Inspect the teams to ensure that they are correctly matched and make any necessary rearrangements.

Note: The children will participate in an upcoming activity in these formed teams.





Session 1:

The Big Four – Resources

Macronutrient Team Sign Packages

CARBOHYDRATES

ENERGY



Session 1:

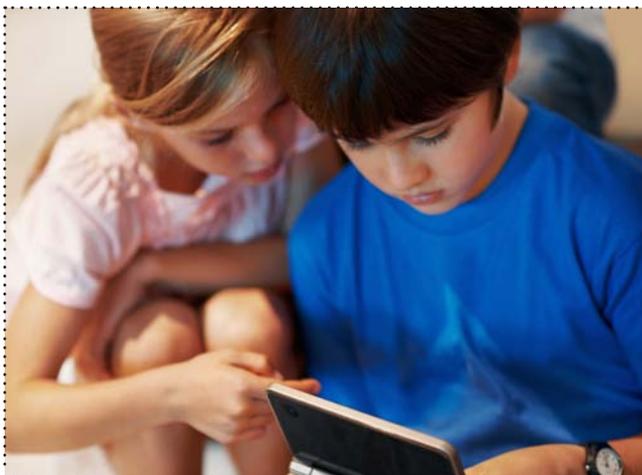
The Big Four – Resources

Macronutrient Team Sign Packages

FATS



ENERGY BLAST





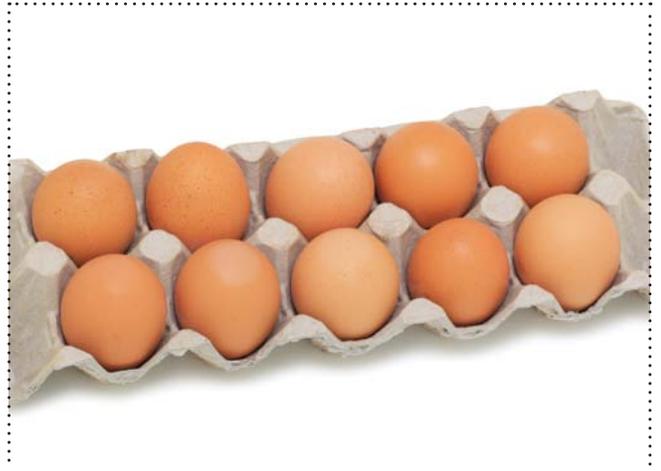
Session 1:

The Big Four – Resources

Macronutrient Team Sign Packages

PROTEIN

BUILDING & MAINTAINING



Session 1:

The Big Four – Resources

Balancing Act

Objective: Children work together and have fun identifying macronutrients and planning balanced meals.

Materials/resources:

- Macronutrient Team sign packages
- Flipchart paper/marker board
- Marker

Instructions: With the children arranged into their macronutrient teams, they must choose a team speaker. The team speaker will announce the decisions of the team. Explain that you will be writing out a menu on the paper/board and the teams will be able to discuss the menu amongst themselves. When you say “Balance!” the teams must end their discussions. Call on the team speakers to answer the following questions:

- Is your team in this meal?
- If yes, which food is it found in? If no, what could be added?
- Is it a WHOA food?
- If it is a WHOA food, what would be a good substitution?

Scorekeeping: Use your discretion to assign points to teams based on the quality of their answers. Give half points for good attempts even if the answers are wrong.





Session 1: The Big Four – Resources

Balancing Act

Here are some examples to get you started:

F = Fats **C = Carbohydrates** **P = Protein**

MENU #1

- 2 slices of whole wheat bread (C)
- 1 Tbsp of jam (WHOA) (C)
- ½ cup orange juice (C)

Possible balancing ideas:

- Add peanut butter to the bread (P & F)
- Add a hard boiled egg (P)
- Use margarine on the bread (F)

MENU #2

- 3 slices of bacon (WHOA) (F)
- 2 hard boiled eggs (P)
- 1 can of orange soda (WHOA) (C)

Possible balancing ideas:

- Add 2% milk (C, F, & P) in the place of bacon and soda
- Replace the soda with cubed, roasted potatoes (C)
- Add whole wheat bread with margarine (C & F)
- Remove the bacon (F)
- Add orange sections (C)

MENU #3

- 2 slices of whole wheat bread (C)
- 1 Tbsp butter (WHOA) (F)
- Tomato and cucumber slices (C)
- Turkey slices (P)

Possible balancing ideas:

- Replace the butter with margarine or an oil dressing (F)
- Use a smaller portion of butter

MENU #4

- 1 cup whole wheat spaghetti (C)
- ½ cup tomato and vegetable sauce made using oil (F & C)
- 1 slice of buttery garlic toast (WHOA) (F & C)
- 1 popsicle (WHOA) (C)

Possible balancing ideas:

- Add lean ground beef to the sauce (P)
- Make homemade garlic bread by brushing fresh, chopped garlic and oil onto whole wheat bread and baking it in the oven (F & C)
- Eat yogurt with nuts and seeds for dessert (C, F & P)

Session 1:

The Big Four – Resources

Testing For Fat

Objective: Children observe the fats in many different foods.

Materials/resources:

- Food samples (apple, cake, doughnut, raw potato wedge, butter, cheese, cooked rice, etc.)
- Pieces of brown paper bags

Instructions: Prepare the food samples and ask for volunteers to perform this experiment. The volunteers will need to choose a food sample and rub it on a piece of brown paper. Then allow 5 minutes for the paper to dry. Find a bright window or light and ask the children to hold their paper up to the light. The samples which contained mostly water (like apple or potato) will have dried and will be opaque. The samples which contained mostly fat (like donut or butter) will be translucent. This is often observed on our napkins that have held a muffin or cookie. Ask the children to keep a look out from now on and see if they observe this effect with any of their favourite foods.





Session 1:

The Big Four – Recipes

Baked Apples

Skill level: Easy

Serves: 4

INGREDIENTS

2 large apples 🍏

4 tbsp maple syrup 🍏

4 tbsp rolled oats 🍏

Prep time: 10 minutes

Cook time: 20-25 minutes

2 tbsp sliced almonds/crushed walnuts

2 tsp ground cinnamon

INSTRUCTIONS:

Preheat oven to 350°F

1. Wash apples and slice each apple in half (from top to bottom). Scoop out seeds and core, and place each half face up on a baking sheet. If the apple halves are wobbly, cut a small piece off the bottom to help the apple lay flat on the baking sheet.
2. Fill each apple half with 1 tbsp rolled oats, and 1/2 tbsp almonds/walnuts.
3. Drizzle 1 tbsp maple syrup over each half.
4. Top each half with 1/2 tsp cinnamon and place in oven to bake. Allow time for cooling and enjoy.

EQUIPMENT/TOOLS NEEDED:

- Chef's knife
- Cutting board and non slip mat
- Measuring spoons
- Baking sheet



Session 1:

The Big Four – Recipes

Pumpkin Muffins

Skill level: Moderate

Serves: 6

INGREDIENTS:

- | | |
|---------------------------|------------------------------------|
| 1 egg 🍎 | ¼ cup sugar |
| ¼ cup milk | 1 tsp baking powder |
| ¼ cup canned pumpkin | ¼ tsp salt |
| 2 tbsp oil | ¼ tsp cinnamon |
| ¾ cup whole wheat flour 🍎 | ¼ cup raisins or dried cranberries |

INSTRUCTIONS:

Preheat oven to 400°F.

1. Beat egg.
2. Stir in milk, pumpkin, and oil.
3. In another mixing bowl, mix together flour, sugar, baking powder, salt, and cinnamon.
4. Put liquid mixture into dry ingredients and gently fold the ingredients together.
5. Add raisins or dried cranberries.
6. Put paper muffin cups in muffin pan.
7. Fill paper cups $\frac{2}{3}$ full.
8. Bake 20 minutes or until a toothpick pierced in the center comes out clean.
9. Allow time for cooling and enjoy.

EQUIPMENT/TOOLS NEEDED:

- Fork/whisk
- Rubber spatula
- 2 mixing bowls
- Paper muffin cups
- Muffin Pan
- Toothpick
- Measuring Spoons





Session 2

Vitamins, Minerals, and Digestion – Lesson Plan

Objectives:

- Chefs learn the basics of vitamins and minerals.
- Chefs understand the process of digestion.

RESOURCES	DISCUSSIONS & ACTIVITIES	TIME (MINUTES)
The Tiny Nutrients	Present the information in this resource to the children. This can be a very interactive discussion, as the children have likely already heard of foods that are high in certain vitamins and minerals. Allow them to share this knowledge. <i>essential</i>	15
Digestion of a Peanut Butter Sandwich	This activity allows the children to work in teams to piece together the story of digestion. <i>essential</i>	15
Nutrient Fact Sheets The Art of Vitamins and Minerals	The children will learn about and create unique posters to represent a vitamin or mineral of their choosing. <i>optional</i> <i>Note: if the Chefs! are preparing a dish which requires 30 minutes baking/cooking time, use this time for this activity.</i>	30
A Lot or a Little?	Guide the children through interpreting % Daily Value on food packages in the classroom. Use the information provided by Health Canada at http://www.hc-sc.gc.ca/fn-an/label-etiquet/nutrition/cons/fact-fiche-eng.php to structure the lesson. You may wish to provide each child with a package to read and interpret. After reviewing the information, ask the children to consider whether the food they are holding is a healthy choice or not, using what they know about % Daily Value. <i>optional</i>	15

Try one of these recipes (50 mins):

- Black Bean Burritos
- Turkey Chowder
- Turkey and Barley Shepherd's Pie

TEACHING MOMENT:

Get an update! Ask the children if they have been choosing new foods or eating differently since learning about healthy eating and nutrients.

Session 2

Vitamins, Minerals, and Digestion – Resources

The Tiny Nutrients

Vitamins and minerals, together, are called micronutrients (micro=tiny). They are called micronutrients because the amounts that we need of these substances are very small. Vitamins and minerals are different than the nutrients we discussed in the last session in that they don't contain energy (calories). Even though they don't contain energy, vitamins and minerals can, on top of a lot of other things, help the body use the energy that it gets from the carbohydrates, fats, and protein.

All of the micronutrients can be found in the foods that we eat, but sometimes people buy them in pills when they might not be able to get enough from their food. You may have heard of your friends taking multi-vitamins or Vitamin C supplements.

When you are learning more about vitamins, you might read that they are fat-soluble or water soluble. Soluble is a word for dissolved. So, this means that some vitamins dissolve in fat (vitamins A, D, E & K), and some dissolve in water (all of the B vitamins and vitamin C). Fat-soluble vitamins get stored in body fat and in the liver and they only get used when they are needed. The water-soluble vitamins don't get stored and, if we don't need them, they come out when we pee.

Canada's Food Guide recommends that we eat at least one dark green vegetable and one orange vegetable every day. This is because dark green vegetables are excellent sources of an important vitamin called folate and dark orange vegetables and some dark orange fruits are a good source of vitamin A.

Note: Ask the children to supply you with some examples of these foods. See the list below for ideas:

Dark green vegetables

romaine lettuce
spinach
broccoli
peas
cabbage
asparagus or beans (green)

Orange vegetables

squash
pumpkin
carrots
sweet potatoes

Orange fruits

cantaloupe
peach
nectarine
mango
papaya
apricot

Minerals are nutrients like calcium, iron, and manganese. There are so many different minerals that we need, but you don't have to worry about not getting enough. Minerals are in food, in the skins on food, and even in the water coming out of the tap. However, one mineral in particular is found in abundance in many of the processed foods that we buy; sodium! Most Canadians are consuming much more sodium in their diets than their bodies need; this is because food manufacturing companies use this mineral to add flavour and shelf life to their foods. Over time, consuming too much sodium may lead to high blood pressure which is a risk factor for stroke, heart disease and kidney disease. Visit Health Canada's website for more information about sodium: <http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/food-aliment/sodium-eng.php>





Session 2

Vitamins, Minerals, and Digestion – Resources

Digestion of a Peanut Butter Sandwich

Objective: The chefs work together to build the story of digestion.

Materials/resources:

- Steps of Digestion
- Tape

Instructions: Explain to the children that the macronutrients and micronutrients that they've been learning about can't do anything for our bodies unless they go through the process of digestion. Digestion breaks food down into components that can travel through our bloodstream.

Print several copies, cut out and shuffle the Steps of Digestion. Assign the children to teams of 2-3. Provide each team with a shuffled pile of the Steps of Digestion and ask them to work together to put the steps in order. They can use tape to affix the paper in the order they decide. The first team to have correctly ordered the steps is the winning team. When a team calls out that they have completed, ask all other teams to stop working and wait for you to determine if it is correct. They may need to get back to work, if the other team has not got it right.

Complete this activity by reviewing the steps in their proper order and asking the children if they were surprised by anything they learned.



Session 2

Vitamins, Minerals, and Digestion – Resources

The Steps of Digestion



You are hungry! You spot a peanut butter sandwich and your mouth starts to “water”. Well, that wet feeling in your mouth is **saliva**.

You take a bite out of that sandwich and the **saliva** gets to work. Saliva is able to break down some of the carbohydrates in the bread. Your **tongue** pushes the bread and peanut butter around in your mouth while your **teeth** mash it up into small bits.

Mushed up food (also called **bolus**) is pushed by your **tongue** to the back of your throat and into your **esophagus**, with a big swallow.

The muscular walls of the **esophagus** push the **bolus** of mushed up peanut butter and bread in waves down into your **stomach**.

The **bolus** falls into the churning pool of stomach juices which breaks it into even smaller pieces and kills bacteria. The juices in the stomach are called **gastric juices** and they are very acidic... even more acidic than vinegar. The acidity of the gastric juices causes the proteins in the peanut butter to break apart and become more prepared for use by the body.

After being churned in the **gastric juices**, the **bolus** no longer looks like food. Now, it is called **chyme** (pronounce the ch like a k) and it is more like a liquid.

Chyme journeys into the **small intestine**. The **small intestine** is a digestion powerhouse! The macronutrients (carbohydrates, proteins, and fats) and the micronutrients (vitamins and minerals) are all totally broken down here, so that your body can absorb them better.

The **small intestine** gets help from some other organs. The **pancreas** shuttles over juices that break down proteins and fats. The **liver** shuttles over **bile** to transport the broken down fat to your blood.

During the hours that the **chyme** spends in the **small intestine**, the broken down nutrients are sent to the **liver**. The liver either stores these nutrients (think of fat-soluble vitamins) or sends them into the **blood** to be shuttled around the body to the cells that need them.

The leftovers of your peanut butter sandwich are the things that your body can't do anything with, like the fibre in the bread. These leftovers make their way into the **large intestine** and become dehydrated (the water gets taken out and put back into the body).

The dehydrated waste gets pushed along the last part of the **large intestine**, the **rectum**. That peanut butter sandwich has turned into a big blob that comes out of the bottom hole of the digestive tract (**anus**) when you go to the bathroom. Flush it away and go eat some more!





Session 2

Vitamins, Minerals, and Digestion – Resources

The Art of Vitamins and Minerals

Objective: The children have an opportunity to learn about a vitamin or mineral of their choosing and display what they've learned in an artistic way.

Materials/resources:

- Blank white paper
- Display area/board
- Art supplies (markers/coloured pencils, craft paper, grocery flyers, glue, sparkles, paint and brushes, etc.)
- Nutrient Fact Sheets (included)
- Index cards

Instructions: Present the children with the vitamin and mineral fact sheets, read the options out loud, and allow them to choose a vitamin or mineral of interest to them. They will then use the information provided on the fact sheets to create a representation of the micronutrient. This art can be displayed in a gallery style . Ask them to record the following information on an index card which is to be displayed beside the art:

- Vitamin/mineral name
- One thing the vitamin/mineral does or helps with
- Two foods that it is found in

Note: creating a display board will give all of the group members an opportunity to view the art and learn about the micronutrients. An art display is also a great activity to show to parents/caregivers when they arrive to pick up their children.



Session 2

Vitamins, Minerals, and Digestion – Resources

Nutrient Fact Sheets



Mineral: Calcium

Calcium is a mineral found in many foods. The body needs calcium to maintain strong bones and to carry out many important functions. Almost all calcium is stored in bones and teeth and helps to keep them healthy and hard.

Muscles use calcium to move and nerves need it to carry messages between the brain and every body part. Calcium also helps blood vessels move blood through the body and to help release hormones that help us grow.

Over time, not eating enough calcium can weaken bones and lead to a disease called osteoporosis. People who have this disease have weak bones that fracture and break easily.

Where to find it:

- Milk, yogurt, and cheese
- Kale, broccoli, and Chinese cabbage
- Fish with soft bones that you eat, such as canned sardines and salmon
- Most grains (such as breads, pastas, and unfortified cereals)
- Fortified fruit, soy, and rice beverages
- Tofu

Adapted from National Institutes of Health

Mineral: Zinc

Zinc is a mineral found in the cells of the body. It helps the immune system fight off bacteria and viruses that might make you sick. Cells also need zinc when they are dividing because it helps to make the DNA in the cells. Zinc also helps wounds heal and it's helps us sense tastes and smells.

Where to find it:

- Oysters are the best source of zinc
- Red meat, chicken, seafood such as crab and lobsters, and fortified breakfast cereals
- Beans, nuts, whole grains, and dairy products

Adapted from National Institutes of Health



Session 2

Vitamins, Minerals, and Digestion – Resources

Nutrient Fact Sheets

Vitamin: Folate (aka vitamin B9)

Folate is a water-soluble B vitamin. It is found naturally in foods, but many foods have it added as well. Folate gets its name from the Latin word "folium" for leaf.

Folate helps make new cells and keep them healthy. This is especially important during periods of rapid growth. Folate is also required to make red blood cells which carry oxygen through the body. Folate is needed to make genetic material, the building blocks of cells. It also helps prevent mutation in that genetic material that may lead to cancer.

If there is not enough folate in your body, you could start to feel weak and tired because your body is not getting enough oxygen; this is called anemia.

Where to find it:

- Fortified breads and cereals
- Leafy green vegetables (like spinach and turnip greens).
- Fruits (like citrus fruits and juices).
- Dried beans and peas.

Adapted from National Institutes of Health

Vitamin: Riboflavin (aka vitamin B2)

Riboflavin is a water-soluble vitamin that helps your body turn those carbohydrates, proteins, and fats that you eat into energy. Riboflavin also works with other vitamins and minerals to produce red blood cells. It is also important for vision.

Where to find it:

- Meat
- Eggs
- Legumes (like peas and lentils)
- Nuts
- Dairy products
- Green leafy vegetables, broccoli, and asparagus
- Fortified cereals

IT'S A FACT! If Riboflavin is added to white foods, it turns them yellow. Riboflavin can break down if exposed to ultraviolet light. This means that milk stored in see-through glass and plastic bottles has less riboflavin than milk stored in waxed paper cartons.

Adapted from www.kidshealth.org

Session 2

Vitamins, Minerals, and Digestion – Resources

Nutrient Fact Sheets



Vitamin: A (aka Retinol or Beta Carotene)

Vitamin A is fat-soluble vitamin that helps your eyes see at night and in color. Vitamin A also keeps your immune system up and running and keeps your skin looking healthy.

Where to find it:

- Milk
- Eggs
- Liver
- Fortified breads and cereals
- Darkly coloured orange or green vegetables such as carrots, sweet potatoes, pumpkin, and kale
- Orange fruits such as cantaloupe, apricots, peaches, papayas, and mangos

IT'S A FACT! Beta carotene is the form of vitamin A that is found in fruits and vegetables. A general rule is that brightly colored orange and yellow vegetables and fruit are good sources of beta carotene. There's no danger in eating too many of these vegetables and fruits, but if you do, take a look in the mirror . . . your skin might turn orange!

Adapted from www.kidshealth.org

Vitamine: C (aka ascorbic acid)

Vitamin C is a water-soluble vitamin needed to form collagen, a tissue that helps to hold cells together. It's essential for healthy bones, teeth, gums, and blood vessels. It helps the body absorb iron and calcium, works with other vitamins and minerals to heal wounds, and contributes to brain function. Vitamin C is also able to the body fight off any damage from pollution or toxins in the environment.

Where to find it:

- Fruits and vegetables such as red berries, kiwi, red and green peppers, tomatoes, broccoli, spinach, and oranges.

IT'S A FACT! Humans and guinea pigs share one important thing in common; we're two of the very few animals that can't make our own vitamin C in our bodies. Because it is a water soluble vitamin, when you cook your spinach or broccoli, use as little water as possible or add the water to homemade soup! If you pour the water down the drain, you're pouring away a lot of the vitamin C.

Adapted from www.kidshealth.org



Session 2

Vitamins, Minerals, and Digestion – Resources

Nutrient Fact Sheets

Vitamin: D

Vitamin D is a fat-soluble vitamin that works together with calcium to make bones strong. It actually helps the body absorb calcium. Vitamin D is also called the sunshine vitamin because, during the spring and summer when sunlight hits your skin, your body makes its own vitamin D! In the winter, when the sun is not strong enough, you can also get vitamin D from certain foods.

Where to find it:

- Egg yolks
- Fish oils
- Fortified milk or soy beverage

Adapted from www.kidshealth.org

Vitamin: E

Vitamin E is a fat soluble vitamin that works as a protector against damage to cells from pollution and toxins in the environment. Vitamin E also helps nerves signal or talk to each other. It is also important for the health of red blood cells, so much so, that a deficiency in vitamin E can cause anemia. However, it is very easy to get enough vitamin E from food so you don't have to worry about being deficient.

Where to find it:

- Vegetable oils
- Nuts
- Leafy, green vegetables
- Whole grains breads and cereals

IT'S A FACT! Vitamin E is sometimes added to oils to keep them from going rancid in the cupboard.

Adapted from www.kidshealth.org

Session 2

Vitamins, Minerals, and Digestion – Resources

Nutrient Fact Sheets



Vitamin: B12

Vitamin B12 is a water-soluble vitamin that helps to make red blood cells, and is important for nerve cell function. It also helps to make DNA, the genetic material of your cells. Although, it is water-soluble, a small amount is stored in the liver.

Where to find it:

- Fish
- Red meat
- Poultry
- Milk and cheese
- Eggs
- Fortified cereals

IT'S A FACT! Vitamin B12 is packaged with protein in foods. That's why the best sources of B12 are also good sources of protein.

Adapted from www.kidshealth.org

Vitamin: B6

Vitamin B6 is a water-soluble vitamin that helps your body access the energy it has stored from food. It is also important for normal brain and nerve function because it helps to create the chemical signals that go between nerves. It also helps the body break down proteins and make red blood cells.

Where to find it:

- Potatoes
- Bananas
- Beans
- Seeds and nuts
- Red meat, chicken, and fish
- Eggs
- Fortified cereals

Adapted from www.kidshealth.org



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Vitamin: Thiamine (aka vitamin B1)

Thiamine is a water-soluble vitamin that helps the body convert carbohydrates into energy and is necessary for the heart, muscles, and nervous system to function properly. Thiamine is needed in every cell of the body.

Where to find it:

- Whole grain or fortified breads, cereals, and pasta
- Meat and fish
- Dried beans, soy foods, and peas

Adapted from www.kidshealth.org

Vitamin: Niacine (aka vitamin B3)

Niacine is a water-soluble vitamin that helps the body turn food into energy. It helps maintain healthy skin and is important for nerve function. Niacine can also be very good for the heart because it stops the body from making bad fats in the blood which hurt the heart.

Where to find it:

- Red meat
- Chicken
- Fish
- Fortified hot and cold cereals
- Peanuts

Adapted from www.kidshealth.org

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Vitamin: **K**

Vitamin K is a fat-soluble vitamin that is necessary for clotting blood. If you didn't have vitamin K working for you, a paper cut would never stop bleeding. It also helps the body put calcium into bones.

Where to find it:

- Leafy, green vegetables like spinach, kale, and broccoli
- Fruits like avocado, kiwi, and grapes

IT'S A FACT! Much of the vitamin K in your body is made by bacteria that live in your colon.

Adapted from www.kidshealth.org

Mineral: **Iron**

Iron is a mineral that helps red blood cells carry oxygen to all parts of the body. It is possible for people to not eat enough iron and they can develop anemia. Symptoms of iron-deficiency anemia include weakness and fatigue, lightheadedness, and shortness of breath.

Where to find it:

- Red meat
- Pork
- Fish and shellfish
- Chicken,
- Lentils, beans and soy foods
- Green leafy vegetables
- Fortified flour, grains, and cereal

IT'S A FACT! Iron and many other elements are created when really big stars get old and explode; this is called a supernova.

Adapted from www.kidshealth.org



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Mineral: Magnesium

Magnesium is a mineral that helps muscles contract and relax, and nerves signal to each other. It steadies the heart rhythm and works with calcium, vitamins D and K, to keep bones strong. It also helps the body create energy and build proteins.

Where to find it:

Aliments qui contiennent du magnésium :

- Whole grains and whole-grain breads
- Nuts and seeds
- Green leafy vegetables, potatoes, beans, avocados, bananas
- Milk
- Cocoa

IT'S A FACT! The reason green, leafy vegetables contain magnesium is because it is at the center of every molecule of chlorophyll (what gives plants their green colour).

Adapted from www.kidshealth.org

Mineral: Phosphorus

Phosphorus is a mineral that helps form healthy bones and teeth. It also helps the body make energy. It is part of every cell membrane, and every cell in the body because it is required in the structure of DNA.

Where to find it:

- Milk and milk products like cheese and yogurt
- Meat
- Fish

Adapted from www.kidshealth.org

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Health Canada / Santé Canada

Your health and safety... our priority.

Votre santé et votre sécurité... notre priorité.



ALL ABOUT NUTRIENTS

VITAMINS, MINERALS, AND DIGESTION

Using the Nutrition Facts Table: % Daily Value

How to CHOOSE

The Nutrition Facts table gives you information on calories and 13 core nutrients. Use the amount of food and the % Daily Value (% DV) to choose healthier food products.

Follow these three steps:

1 LOOK at the amount of food
 Nutrition Facts are based on a specific amount of food (also known as the serving size). Compare this to the amount you actually eat.

2 READ the % DV
 The % DV helps you see if a specific amount of food has a little or a lot of a nutrient.

5% DV or less is a **LITTLE**
 15% DV or more is a **LOT** } This applies to all nutrients.

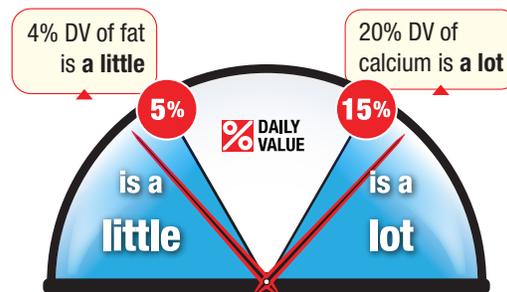
3 CHOOSE
 Make a better choice for you. Here are some nutrients you may want...

- | | |
|----------------------------|----------------|
| less of | more of |
| • Fat | • Fibre |
| • Saturated and trans fats | • Vitamin A |
| • Sodium | • Calcium |
| | • Iron |

Here is an example of how to choose:
 You are at the grocery store looking at yogurt. The small container (175 g) of yogurt you pick has a **little** fat (4% DV) and a **lot** of calcium (20% DV) – this is a better choice if you are trying to eat less fat and more calcium as part of a healthy lifestyle!

Yogurt

Nutrition Facts	
Per 3/4 cup (175 g)	
Amount	% Daily Value
Calories 160	
Fat 2.5 g	4 %
Saturated 1.5 g	8 %
+ Trans 0 g	
Cholesterol 10 mg	
Sodium 75 mg	3 %
Carbohydrate 25 g	8 %
Fibre 0 g	0 %
Sugars 24 g	
Protein 8 g	
Vitamin A 2 %	Vitamin C 0 %
Calcium 20 %	Iron 0 %



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 Également disponible en français sous le titre : Utilisez le tableau de la valeur nutritive : % de la valeur quotidienne.
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Nutrient Fact Sheets

How to COMPARE

Use the amount of food and the % Daily Value (% DV) to compare and choose healthier food products.

Follow these three steps:

1 LOOK at the amounts of food

Compare the amounts of food (also known as the serving sizes) in the Nutrition Facts tables.

Cracker A has 9 crackers and weighs 23 grams.

Cracker B has 4 crackers and weighs 20 grams.

Because the weights are similar, you can compare these Nutrition Facts tables.

2 READ the % DVs

Since you are comparing crackers, you may want to look at the % DVs for saturated and trans fats, sodium and fibre.

Cracker A has 13% DV for saturated and trans fats, 12% DV for sodium and 4% DV for fibre.

Cracker B has 2% DV for saturated and trans fats, 4% DV for sodium and 12% DV for fibre.

Remember: 5% DV or less is a little and 15% DV or more is a lot. This applies to all nutrients.

3 CHOOSE

In this case, **Cracker B** would be a better choice if you are trying to eat less saturated and trans fats, less sodium and more fibre as part of a healthy lifestyle.

Use the Nutrition Facts table and *Eating Well with Canada's Food Guide* to make healthier food choices.

Cracker A

Nutrition Facts	
Per 9 crackers (23 g)	
Amount	% Daily Value
Calories 90	
Fat 4.5 g	7 %
Saturated 2.5 g + Trans 0 g	13 %
Cholesterol 0 mg	
Sodium 280 mg	12 %
Carbohydrate 12 g	4 %
Fibre 1 g	4 %
Sugars 0 g	
Protein 3 g	
Vitamin A 0 %	Vitamin C 0 %
Calcium 2 %	Iron 8 %

Cracker B

Nutrition Facts	
Per 4 crackers (20 g)	
Amount	% Daily Value
Calories 90	
Fat 2 g	3 %
Saturated 0.3 g + Trans 0 g	2 %
Cholesterol 0 mg	
Sodium 90 mg	4 %
Carbohydrate 15 g	5 %
Fibre 3 g	12 %
Sugars 1 g	
Protein 2 g	
Vitamin A 0 %	Vitamin C 0 %
Calcium 2 %	Iron 8 %

Did you know?

You may be able to compare products that don't have similar amounts of food.

For example, you could compare the % DVs of a bagel (90 g) to the % DVs of 2 slices of bread (70 g) because you would most likely eat either amount of food at one meal.



Session 2:

Vitamins, Minerals, and Digestion – Recipes

Black Bean Burritos

Skill level: Moderate

Serves: 8

Prep time: 20 minutes

Cook time: 30 minutes

INGREDIENTS:

1 tbsp vegetable oil

1 medium onion diced 🍅

1 green pepper diced 🍅

2 tsp chili powder

½ tsp cumin

¼ tsp pepper

1 can black beans, drained and rinsed

1 cup mild salsa

1 cup frozen corn niblets 🍅

2 cups reduced fat cheddar cheese, grated

8–10 small whole wheat tortillas

INSTRUCTIONS:

Preheat oven to 400°F

1. Heat oil in a large non-stick skillet. Sauté onion over medium heat for 2 minutes.
2. Add green pepper, chili powder, cumin and pepper, cook, stirring for 2 more minutes.
3. Add salsa, corn and black beans, remove skillet from heat and set aside.
4. Spray an oven-proof baking dish with non-stick spray.
5. Divide filling between tortillas making a line of filling along the center.
6. Divide 1½ cups of cheese and add to the filling in each burrito.
7. Gently roll up tortillas and place in baking dish, seam side down.
8. Sprinkle the remaining cheese over top and bake for 20–30 minutes or until cheese is melted and tortillas are golden brown.

EQUIPMENT/TOOLS NEEDED:

- Cutting board and non-slip mat
- Chef's knife
- Paring knife
- Can opener
- Strainer
- Grater
- Dry measuring cups and spoons
- Non-stick spray
- Baking dish





Session 2:

Vitamins, Minerals, and Digestion – Recipes

Turkey Chowder

Skill level: Moderate

Prep time: 20 minutes

Serves: 6

Cook time: 30 minutes

INGREDIENTS:

2 tbsp margarine

1 small onion, diced 🍎

1 stalk celery, diced

2 carrots, peeled and diced 🍎

½ cup turnip, peeled and diced 🍎

1 large potato, peeled and diced 🍎

2 tbsp flour

4 cups low sodium chicken or turkey stock

½ tsp dried thyme 🍎

½ tsp summer savory 🍎

¼ tsp pepper

½ tsp salt

2 cups cooked turkey, chopped 🍎

½ cup frozen corn 🍎

INSTRUCTIONS:

1. In a large pot, melt margarine over medium to high heat. Add onion, celery, carrots and turnip. Sauté for 5 minutes.
2. Remove the pot from the burner and sprinkle mixture with flour. Stir well with a wooden spoon and return to burner. Cook flour mixture on low heat stirring well for 1 minute.
3. Slowly whisk in stock and bring mixture to a simmer. Add potatoes, thyme, savory, salt and pepper. Cover pot and lightly simmer for 20 minutes.
4. Add turkey and corn, continue cooking for 10 more minutes or until potatoes and turnips are cooked.

EQUIPMENT/TOOLS NEEDED:

- Large pot with lid
- Wooden spoon
- Cutting board and non slip mat
- Dry measuring cups and measuring spoons
- Can opener
- Chef's knife
- Paring knife
- Whisk



Session 2:

Vitamins, Minerals, and Digestion – Recipes

Turkey and Barley Shepherd's Pie

Skill level: Moderate

Prep time: 10 minutes

Serves: 8

Cook time: 50 minutes

INGREDIENTS:

3 cups potatoes, diced 🍷

2 tbsp margarine

2 cups sweet potatoes, diced

¼ cup 2% milk (or more as needed) 🍷

Fillings:

1 tbsp vegetable oil

¼ tsp pepper

½ cup onion, finely diced 🍷

½ tsp salt

½ cup celery, diced

½ cup pearl barley

1½ lbs ground turkey 🍷

1 tbsp Worcestershire sauce

½ cup carrot, grated 🍷

1 cup frozen corn 🍷

½ tsp garlic powder

1 cup low sodium chicken stock

1 tsp thyme 🍷

INSTRUCTIONS:

Preheat oven to 400°F

1. Boil potatoes until soft, mash with margarine and milk, add cheese.
2. Heat oil in pot, add onion and celery cook till softened (5 min).
3. Add carrots and ground turkey breaking the meat up with a wooden spoon as it cooks.
4. Add barley, thyme, Worcestershire sauce, stock, pepper, and garlic. Cover and let simmer for 15 minutes.
5. Add corn and use a rubber spatula to scrape mixture into a 9 x 3 inch pan that has been sprayed with non stick spray.
6. Top meat layer with mashed potatoes and bake uncovered 30 min until mixture starts to bubble and potatoes start to brown a bit.

EQUIPMENT/TOOLS NEEDED:

- Cutting board and non slip mat
- Chef's knife
- Paring knife
- Medium pot with lid
- Large non-stick skillet
- Non-stick spray
- Potato masher
- Grater
- Dry measuring cups and measuring spoons
- Wooden spoon
- 9 x 13 inch baking pan
- Rubber Spatula

