DESCRIPTION

Students will explore body-building foods that contain protein and calcium, and how these foods are important in proper growth and development. They will sort close to the source body-building foods in a "Human Venn Diagram" activity, and make salsa with locally grown, close to the source ingredients.

TIME: 45 minutes

SUBJECT: Health, Language Arts

LEARNING OBJECTIVES

After this lesson students will be able to:

- Understand why foods that contain protein and calcium are important to their health.
- Identify and sort close to the source body-building foods into protein only, calcium only, or protein and calcium categories.
- Define protein and calcium foods as those coming from animal and plant sources.

ACADEMIC STANDARDS*

HCPS III: HE.K-2.1.3, HE.K-2.1.5, LA.2.1.4

*A detailed list of the Academic Standards can be found in the Unit Overview document.

LESSON OUTLINE

- I. Introduction (3 minutes)
- II. Body-Building Foods (10 minutes)
 - Close to the Source Body-Building Foods Sorting
 - Protein
 - Calcium
- III. Body-Building Venn Diagram (15 minutes)
 - · Protein Only, Calcium Only, Protein & Calcium
- IV. Close to the Source Snack (15 minutes)
 - Body-Building Salsa Demonstration & Tasting
- V. Closing (2 minutes)



KEY TERMS AND CONCEPTS

Body-Building Foods – Foods containing protein and calcium that help us grow

Calcium – A mineral that helps keep our bones and teeth strong; found in many foods of animal and plant origin

Close to the source – High quality whole foods that come straight from nature; less processed and usually more nutritious than processed foods

Protein – A nutrient that helps us grow and keeps us healthy; found in many foods of animal and plant origin



LESSON MATERIALS

Core Supplies:

- 'ĀINA In Schools apron with name tag
- Kōkua Hawai'i Foundation cloth bag
- · Laminated 'ĀINA Food Guide Poster
- Copy of 'ĀINA In Schools Student Workbook
- Knife (plastic lettuce knife)*
- · Can opener
- Citrus squeezer
- · Cutting board
- Non-latex gloves
- Napkins
- · Garbage/compost bag

Lesson Supplies:

- Vocabulary Cards (4)
- · Close to the Source Body-Building Foods Signs (4): Grilled Chicken, Chicken Nuggets, Plain Yogurt, Artificially Flavored Yogurt
- Body-Building Foods Cards (30)
- Body-Building Venn Diagram Signs (3): Protein Only, Calcium Only, Protein & Calcium
- · Tasting cups for salsa

Teaching Team to Provide:

- Serving tray (or use top of supply bin as tray)
- · Snack ingredients in separate containers
- Mixing bowl (ideally clear)
- Mixing spoon
- Serving spoon(s)

*Please do not bring knives on campus. The only knives allowed are those that are plastic and very well attended by an adult.











Close to the Source

Body-Building Food Sign

INGREDIENT QUANTITIES NEEDED FOR SNACK

	How much to buy	Up to 30 students	Up to 60 students
d	Black beans	1/2 cup dry or 1-15 oz. can	1 cup dry or 2-15 oz. cans
	Grape Tomatoes*	2 pounds	4 pounds
	Corn*	1 ear or 1-8 oz. can	2 ears or 2-8 oz. cans
	Garlic Cloves	1 clove	2 cloves
	Lime* Juice	1 large or 2 small	3 small limes
	Cilantro* (fresh)	6-10 leaves	15-20 leaves
	Salt	pinch, to taste	pinch, to taste
	Whole Grain Tortilla Chips	3-4 per student	3-4 per student

*Locally grown

ACCOMPANYING DOCUMENTS

- Student Worksheet: Protein and Calcium Foods
- Take Home Letter with Body-Building Salsa Recipe

ADVANCE PREPARATION

- Lead docent to contact teachers to confirm date/time of the lessons.
- Review lesson content, roles and shopping needs with docent team.
- Shop for snack ingredients and review materials needed for lesson.
- No more than one day prior to the lesson, prepare snack ingredients:
 - Cut vegetables and limes
 - Cut kernels off fresh corn cobs (if using fresh corn)
 - Soak and cook black beans (if using dry beans rather than canned)

Nutrition Education * Grade 2 * Lesson 5

BACKGROUND INFORMATION

Body-Building Foods contain protein and calcium and contribute to normal growth and development.

Protein is found in every cell, tissue, and organ in the body. Children need enough protein in their daily diet to replace normal cell turnover and to support proper muscle growth. Children 4 to 13 years of age need 19-34g of protein per day. In addition to being a building block for muscles, bones, cartilage and skin, protein is also a building block for enzymes, hormones, and vitamins.

Protein can be found in both animal and plant sources: meat, fish, poultry, eggs, dairy, beans, nuts and whole grains. Although protein from animal sources tends to be considered a complete protein (includes all essential amino acids needed to build new protein), different vegetable proteins can be combined to create a complete protein (e.g., rice and beans). It is important to eat a wide variety of protein sources to get all the amino acids you need. It is also important to look at the whole protein package and know how much saturated fat comes along with your protein choice. Vegetable proteins are excellent sources of protein containing fiber, vitamins, minerals, and limited saturated fat. Fish and poultry are usually the best sources of animal proteins with less saturated fat than red meat. Reducing red meat and increasing beans, nuts, fish, and poultry consumption can reduce the risks of developing heart disease, cancer, and diabetes.

Protein Foods: 1 Serving

- · 1 oz. fish, lean meat or poultry
- ¼ cup tofu
- · 1 Tbsp. peanut butter
- 1 egg
- ¼ cup cooked legumes/dried beans (kidney, mung, soybeans), split peas or lentils
- ½ oz. of nuts (12 almonds, 24 pistachios, 7 walnut halves)
- · 1 oz. fish cake

Calcium is a mineral needed by the body for healthy bones, teeth, and proper heart, muscle and nerve function. Our bodies cannot make calcium so we must absorb it through food. Adequate calcium intake in children is especially important because peak bone mass is usually achieved by age 25. Children between 4 and 13 years of age need 1,000-1,300 mg of calcium per day.



Vitamin D is an important vitamin that promotes calcium absorption in the body. Vitamin D is found naturally in very few foods but can be synthesized in the body through sunlight, taken as a supplement, or added through fortification.

Many foods are enriched or fortified with calcium and other vitamins. **Enriched** means that nutrients are added back to foods after being lost in processing (e.g., enriched white flour). **Fortified** means that nutrients are added to foods which were not originally there (e.g., milk fortified with Vitamin D or Orange juice fortified with calcium).



While dairy products are well known for their calcium content, dark leafy greens, beans, fish, and other food sources are also high in calcium. Like protein, calcium can also come from both animal and plant sources.



Calcium Foods: 1 serving

- 1 cup milk
- 1 ½ cups cottage cheese
- 1 cup yogurt
- 1 ½ oz. natural cheese (like cheddar or Swiss)

Continued on next page...



BACKGROUND INFORMATION

CONTINUED

Calcium equivalents of 1 cup milk (300 mg calcium) are:

- · 4 cups kidney beans
- 7 oz. tofu
- · 2 cups watercress
- · 3 cups garbanzo, mung, or white beans
- 1 cup spinach or marunggay (moringa) leaves
- 1-1/2 cups taro leaves or Chinese cabbage
- 1 cup dry wakame (seaweed)
- · 2 oz. sardines
- · 3 oz. canned fish with bones
- · 1/4 cup small dried fish
- 3 tablespoons sesame seeds
- 1/2 cup frozen-cooked collard greens
- 1 cup fresh-cooked collard greens
- 1 ¼ cup boiled/steamed soybeans

Many foods provide both protein and calcium. Examples of these foods include almonds, peanuts, beans, tofu, yogurt, cheese, and milk. Additionally, fish eaten with their bones, like canned sardines and salmon make good sources of protein and calcium.

References:

Human Nutrition by Revilla, Titchenal, Calabrese, Gibby, and Meinke: pressbooks.oer.hawaii.edu/humannutrition/
"Nutrition Source: Protein." hsph.harvard.edu/nutritionsource/what-should-you-eat/protein/

"US Dietary Guidelines, 2010-2015." dietaryguidelines.gov





FOOD TO GROW ON Lesson 5

INTRODUCTION 3 MINUTES

"Hello again, we are..." (State docent names.)
"Welcome to your fifth nutrition lesson as part of the 'ĀINA In Schools program!"

"Do you remember our last lesson? We learned about how your food choices can affect you and your ENVIRONMENT. We discussed how eating close to the source is good for you and the environment. Remember Lani the local banana from Hawai'i and Iggy the imported banana from Ecuador? Who was closer to the source?"

Answer: Lani!

"During our last four lessons we have talked about high quality foods and low quality foods. We talked about how a high quality food is closest to its source, like the apple as opposed to the Apple Jills cereal. Who remembers which one was closest to its source?" Wait for response.

Desired answer: Apple!



"Right! And who can tell me which food made from kalo/taro is closer to its source: poi or taro chips?" Desired answer: Poi!



"CLOSE TO THE SOURCE foods are high quality foods that have not had much taken away from them or added to them. They are best for your body."

"Today we're going to talk about foods that help you grow! Do you remember your 'ĀINA Food Guide?"
Hold up a sample and have the students look at their own in their workbooks.

"Foods that help you grow can also be called BODY-BUILDING FOODS."

"Later, you will also get to try a close to the source snack made from body-building foods."

"Let's get started!"



'ĀINA Food Guide



BODY-BUILDING FOODS

10 MINUTES

"Who can tell me what a BODY-BUILDING FOOD does for your body?" Accept a few answers.

Possible answers: Helps you grow, helps your muscles grow stronger, helps you get taller, foods with protein & calcium.

"That's right! All of the foods that you see in the BODY-BUILDING group contain PROTEIN and CALCIUM that help to build our body." Refer to the 'AINA Food Guide and point out this group.

"Look at your 'ĀINA Food Guide and raise your hand if you can give an example of a Body-Building Food." Accept a few answers.

'ĀINA Food Guide

Invite four student volunteers to come to the front of the class. Have each student choose one of the four Close to the Source Body-Building Foods Signs. Instruct the students to stand on one side of the class if they have a CLOSE TO THE SOURCE food and to stand on Body-Building the other side of the class if they have a FAR FROM THE SOURCE food.



Food Sign

Then ask the entire class: "Does Artificially Flavored Yogurt belong on the FAR FROM THE SOURCE side?" Desired answer: Yes!

"What is the CLOSE TO THE SOURCE alternative to artificially flavored yogurt?" Desired answer: Plain

"What about the Fried Chicken, is it far from the source or close to the source?" Desired answer: Far from the Source!

"What is the CLOSE TO THE SOURCE alternative to Chicken Nuggets and why?" Desired answer: Grilled Chicken, because it is not fried in oil with extra breading.

Collect the food signs, thank the volunteers and have them sit down.

CLOSE AND FAR FROM THE SOURCE PAIRS

CLOSE TO THE SOURCE Plain Yogurt Grilled Chicken

FAR FROM THE SOURCE Artificially Flavored Yogurt Chicken Nuggets

Protein

"Let's talk about protein first."

"PROTEIN is something that our bodies need every day! PROTEIN is used to build



and maintain cells, and can be found everywhere in our bodies including our hair, our fingernails, our skin, our blood, and especially in our muscles."

"We need to eat enough protein from different sources to make sure that we are building our muscles."

"Many different foods contain protein! Isn't that wonderful? We have so many foods to choose from to keep our bodies healthy."



"Do you notice that protein comes from both animals and plants? Animal protein can come from cows (beef, milk, cheese, yogurt, ice cream), pigs (pork), turkeys (turkey), chickens (chicken, eggs), fish, and shellfish (crab, lobster, shrimp, mussels, etc.)."

DOCENT NOTES

- · Have students refer to their 'ĀINA Food Guide for examples of Body-Building Foods or use the picture cards.
- · Assistant Docent: Write the Body-Building Foods with protein on the board on the left under the heading PROTEIN, leaving room on the right for the calcium examples.

Grade 2 **FOOD TO GROW ON**

Lesson 5

BODY-BUILDING FOODS

CONTINUED

"Plant protein comes from many edible plants. including corn, beans, peas, lentils, nuts, and seeds. Protein is also found in whole grains like brown rice and whole wheat. It also comes in soy products like soybeans, tofu, and soy milk. Imagine all of the choices you have to get enough protein every day!"

Calcium

"Now let's talk about calcium."

"CALCIUM is another thing that our bodies need every day! CALCIUM is used to keep our bones and teeth strong. For example, someone who



gets enough calcium every day from what they eat and drink will have hard bones and teeth, like this..." (Hit your knuckle against something hard to make a sound.)

DOCENT NOTES

- Have students refer to their 'ĀINA Food Guide for examples of Body-Building Foods or use the laminated picture cards.
- Assistant Docent: Write the Body-Building Foods with calcium examples on the board on the right under the heading CALCIUM.

"Many different foods contain calcium! We have so many foods to choose from to keep our bodies healthy."

"Body-Building Foods with calcium also come from both animals and plants, just like protein. Calcium from animal sources can come from cows (milk, cheese, cottage cheese, vogurt), and fish that we eat with their bones (sardines, salmon, anchovies)."

"Calcium from plant sources comes from many edible plants like kidney beans, garbanzo beans, mung beans, sesame seeds, taro/kalo leaves, seaweed, watercress, and spinach! It also comes in sov products like soy beans, tofu, and soy milk.

Imagine all of the choices you have to get enough calcium every day!"

"You've probably noticed that some foods contain protein AND calcium. Raise your hand if you see some Body-Building Foods that are on both the Protein and Calcium lists."

DOCENT NOTES

Assistant Docent: Circle the Body-Building Foods that are on both the Protein and Calcium lists as students call out answers.



ACTIVITY KEY

PROTEIN FOODS

- · Almonds & Almond Butter · Almonds & Almond
- **Black Beans**
- Canned Salmon
- Cheese
- Chicken
- Cottage Cheese
- Edamame (soy beans)
- **Enriched Soy Mllk**
- Hummus/Garbanzo beans · Cottage Cheese
- Kālua Pig
- **Kidney Beans**
- Lentils
- Milk
- Peas
- Poke (fish)
- Peanuts & Peanut Butter
- Sardines
- Shrimp
- Steak
- Tofu
- Yogurt

- CALCIUM FOODS
- **Butter**
- Black beans
- · Bok Choy
- Broccoli
- · Canned Salmon
- Chard
- Cheese
- · Collard Greens
- · Edamame (soy beans)
- Enriched Soy Milk
- Hummus/Garbanzo beans
- Kale
- Kalo Leaves
- · Kidney Beans
- Lentils
- · Limu (seaweed)
- Milk
- **Sardines**
- Sesame Seeds
- Tofu
 - Yogurt

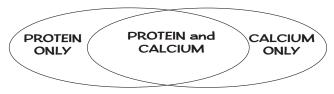
Bolded items represent the Body-Building Foods that contain both Protein and Calcium.



BODY-BUILDING HUMAN VENN DIAGRAM

15 MINUTES

Draw a large Venn Diagram on the board near the protein and calcium example lists.



"Has anyone seen this kind of sorting graph before? Does anyone know what it is called?"

"What does the overlapping section mean? What goes in there?" Accept 1-2 student responses and write a few food examples in each section. Another docent may continue writing in all foods using the key below as the activity is explained to the students.

ACTIVITY KEY

PROTEIN ONLY (usually meats, eggs, some beans)

- Chicken
- Eggs
- Kālua Pig
- Peas
- · Peanuts & Peanut Butter
- Poke (fish)
- Shrimp
- Steak

CALCIUM ONLY (usually leafy greens)

- Bok Choy
- Broccoli
- Chard
- Collard Greens
- Kale
- Kalo Leaves
- · Limu (seaweed)
- Sesame Seeds

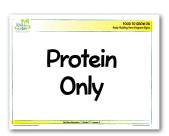
PROTEIN & CALCIUM (usually beans, dairy, foods with edible bones)

- Almonds & Almond Butter
- Black Beans
- Canned Salmon
- Cheese
- Cottage Cheese
- Edamame (soy beans)
- Enriched Soy MIlk
- Hummus/Garbanzo Beans
- · Kidney Beans
- Lentils
- Milk
- Sardines
- Tofu
- Yogurt

Tell students that they will make a Body-Building Human Venn Diagram and will decide if their Body-Building food picture belongs in the "Protein Only," "Calcium Only," or "Protein & Calcium" area.

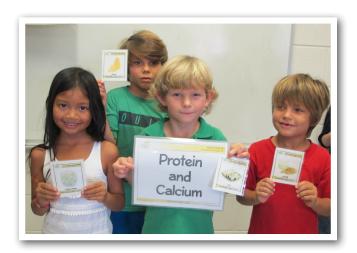
Give "Protein Only,"
"Calcium Only," and
"Protein & Calcium" signs
with key on the back to
three students. Direct
students with the "Protein
Only" and "Calcium Only"
signs to go to opposite
sides of the room, and
"Protein & Calcium" sign to go

the center of the room.



Venn Diagram Sign

Distribute Body-Building Food Cards to all remaining students in the class. Have students review their cards and think about which category their food belongs in. Give students two minutes to find their places. They may consult the diagram on the board and also check in with the sign holders who can correct anyone in the wrong place. When each group thinks they have everyone in the right place, have them silently raise their hands and a docent can confirm.



BODY-BUILDING HUMAN VENN DIAGRAM

CONTINUED

ACTIVITY TIPS

For large classes, try one or more of these strategies:

- Use rope or clothesline to create two large overlapping circles on the floor to easily designate where students can stand for their respective categories.
- Instead of having all students find their place on the diagram at the same time, call each category or student up one at a time.
- Individually or in groups, have students secure their cards to designated sections of the classroom whiteboard, then sit back down to review the categories as a class.



Once all three groups have everyone in the right place, have each sign holder announce his/her group title to the class ("Protein Only," "Calcium Only," or "Protein & Calcium"), then each student in each group will read the name of their card aloud.

"Great job everyone! As you can see there are many BODY-BUILDING FOODS that contain PROTEIN, CALCIUM, or even both PROTEIN and CALCIUM. These foods come from animals and plant sources. It is important to choose CLOSE TO THE SOURCE BODY-BUILDING FOODS whenever possible."

Thank the students for their participation and have them return to their seats after collecting the food cards. Are you ready for your close to the source snack?"







CLOSE TO THE SOURCE SNACK

15 MINUTES

Have the students participate as much as possible in the food preparation process. All helpers must wash their hands.

Make sure you begin with all of the needed items close at hand and all ingredients prepped and in separate containers.

Have students add each ingredient to the mixing bowl

- black beans
- · tomatoes, diced small*
- · corn kernels*
- · garlic, minced
- · lime juice*
- cilantro, chopped fine*
- salt



*Locally grown

As the recipe is being prepared, talk about each ingredient and whether it was grown locally (close to the source).

After the salsa has been prepared, fill each cup about half-full with the sample and distribute with 3-4 whole grain tortilla chips.

While students are tasting their food samples, engage them by asking a few questions:

- "What is the main BODY-BUILDING FOOD in the salsa?" (black beans)
- "Based on what you know about plant foods, what are some of the things in the recipe that protect us? [E.g., vitamin C (lime/lemon juice, tomatoes, cucumbers), etc.]
- "What are the edible plant parts in this recipe?"
 (E.g., corn/beans=seeds, garlic=root, cilantro=leaf, tomatoes/limes=fruits, etc.)
- "Which of the ingredients do we grow here in Hawai'i?" (tomatoes, cucumbers, cilantro, limes, corn).
- "How do we benefit the environment by eating food grown in Hawai'i?"
- "Would you ask your parents to help you make this recipe at home?"

DOCENT NOTES

- Point out that anyone with a known allergy to any of the food items should not touch or sample it. By this age, kids should know this about themselves, but please bring it to the attention of the teacher who can make sure that any students with known allergies or intolerances do not receive snacks.
- You may use the Lesson Supply Bin lid as a serving tray.
- Give a snack to the teacher and any other classroom aides.
- Please refrain from verbalizing your own food preferences and be aware of your body language and facial expressions. These subtle cues have a big impact on a child's willingness to try foods!
- Encourage the students to try the snack.
 Remind them of the "no yuck" rule: They can choose not to try any foods they wish, but if they do try them, they must keep their personal opinions to themselves.
- If time permits, guide students in starting to fill in the Venn diagram on their Student Worksheet.



'ĀINA VIDEOS

Check out the 'ĀINA Videos for discussions on key concepts and directions to make the 'ĀINA Close to the Source Snacks: kokuahawaiifoundation.org/ainavideos

CLOSING 2 MINUTES

Provide a quick review:

- BODY-BUILDING FOODS contain protein, calcium, or both!
- PROTEIN helps our muscles grow and our brains learn
- CALCIUM helps our bones grow and keeps our teeth strong.
- BODY-BUILDING FOODS come from animal and plant sources.
- It is best to eat CLOSE TO THE SOURCE BODY-BUILDING FOODS whenever possible.

Review the Take Home Letter and Recipe:

- "Share the take home letter with your parents and try making the Body-Building Salsa recipe together."
- Encourage students to create their own recipes using ingredients from the Body-Building Foods group. Students may use the 'ĀINA Recipe Challenge form at the end of their 'ĀINA Nutrition Student Workbooks to share their creations. Kōkua Hawai'i Foundation will select recipes to feature in future blog posts, newsletters, and cookbooks.

Thank the students for doing such a great job!

THANK YOU!



Take Home Letter

DOCENT NOTES

- Pack your trash! Please leave the classroom cleaner than you found it by removing all lesson-based trash. We don't want to add any burden or extra trash for the teachers or custodians so please do not throw away any trash in the classroom garbage. Instead:
 - Collect sampling cups and any leftovers.
 - Food scraps may be composted if composting is available on campus.
 - Use the garbage bag in the Lesson Supply Bin to remove all lesson-related food items from the classroom.
- Please do not leave any food in the supply bin. Perishable props have been known to get moldy and smelly when left in the bin after the last lesson.
- Please complete your online docent survey for this lesson. This is valuable feedback that helps to improve our program.
- Please collect student recipe submissions regularly and turn in to KHF staff at our next docent training.



ADDITIONAL RESOURCES

Lesson Plans & Curricula

- "Calcium Makes My Bones and Teeth Strong", Johns Hopkins Center for American Indian Health: caih.jhu.edu/assets/documents/Spring Lesson 7 - Grade 3.pdf
 - Introduces keiki to calcium rich foods and how they help to keep our bones and teeth healthy. Includes activities demonstrating acids breaking down bones and calcium tablets and a fun relay race.
- "Nā Mea 'Ai O Hawai'i" Lessons 9-10, UH CTAHR: www.ctahr.hawaii.edu/NEW/ NaMeaManual.htm
 Explores early Hawaiian and contemporary Body-Building Foods.
- P is for Protein" in Fizzy's Lunch Lab, PBS: pbslearningmedia.org/resource/2f483ede-1d58-47e3-a29e-9af50d844666/2f483ede-1d58-47e3a29e-9af50d844666/

Includes 4 short animated videos and a lesson plan about how our bodies use protein and which foods provide protein.

Videos

 "'ĀINA In Schools Close to the Source Snack Body-Building Salsa," Kōkua Hawai'i Foundation: kokuahawaiifoundation.org/ ainavideos

This short video demonstrates how to make a protein-rich salsa made with black beans and guides students through a mindful eating experience.

 "GrowingGreat: Powerful Proteins," GrowingGreat: youtube.com/ watch?v=mQvRI8G9KZs

This video for kids explores the important role proteins play in fueling our bodies and introduces ideas for easy, protein-packed snacks.

Additional Resources

- "Benefits and Sources of Calcium,"
 Medical News Today: medicalnewstoday.com/ articles/248958
 - Provides information on why calcium is important and what foods provide it. Includes a link to plant-based foods that are rich in calcium.
- "Food Sources of Calcium, US Dietary Guidelines": health.gov/our-work/foodnutrition/2015-2020-dietary-guidelines/guidelines/ appendix-11/
 - Food sources of calcium ranked by amounts of calcium and energy.
- "Nutrition Source: Protein," Harvard School of Public Health: hsph.harvard.edu/nutritionsource/what-should-you-eat/protein/
 Protein is an essential macronutrient, but not all food sources of protein are created equal, and you may not need as much as you think. Learn the basics about protein and shaping your diet with healthy protein foods.
- "10 Tips: Healthy Eating for Vegetarians,"
 USDA: choosemyplate.gov/ten-tips-healthy-eating-for-vegetarians
 - Tips for getting enough protein and calcium when eating a plant-based diet.
- "Top 15 Choices of Plant Based Protein,"
 Medical News Today: medicalnewstoday.com/ articles/321474#15-best-vegan-proteins

 Plant-based protein sources and information about plant vs. animal protein.

Find more at kokuahawaiifoundation.org/ainalessons