

DESCRIPTION

Students will explore strategies to evaluate food labels empowering them to make informed food choices. Students will identify red flag ingredients such as hydrogenated oils, added salt, added sugars, and artificial colors and flavors that have a negative impact on health. In groups, students will compare the ingredients lists of similar food and beverage items in order to determine which one is closer to the source.

TIME: 45 minutes

SUBJECT: Health

LEARNING OBJECTIVES

After this lesson students will:

- Use information found on a food label ingredients list to determine whether or not the food is close to the source.
- Identify the names of red flag ingredients such as hydrogenated oils, added salt, added sugars, and artificial colors and flavors.
- Understand the negative health effects of consuming foods high in hydrogenated oils, added salt, added sugars, and/or artificial colors or flavors.

ACADEMIC STANDARDS

HE.6-8.1.2, HE.6-8.1.9, HE.6-8.2.2, HE 6-8.6.1

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

LESSON OUTLINE

- I. Introduction (3 minutes)
- II. Food Label Clues (8 minutes)
 - Ingredients: Peanut Butter
- III. Identifying “Red Flag Ingredients” (12 minutes)
 - Hydrogenated oils
 - Added salt
 - Added sugars
 - Artificial colors and flavors
- IV. Comparing Food Labels (15 minutes)
 - Looking for Clues Student Worksheet
- V. Close to the Source Snack (5 minutes)
 - Whole Grain Crackers with Locally-Produced Hummus
- VI. Closing (2 minutes)



KEY TERMS AND CONCEPTS

Added Sugars – Natural and artificial sweeteners added to a food during processing

Artificial Colors – Synthetic colors added to enhance food’s appearance

Artificial Flavors – Synthetic flavors added to enhance food’s taste

Fructose – Natural sugar found in honey, and plants such as fruits and vegetables

High Fructose Corn Syrup (HFCS) – A food and beverage sweetener made by combining two natural sugars, glucose and fructose

Hydrogenated Oils – Liquid oils to which hydrogen has been added, making them more stable; treated as saturated fat by the body

Ingredients List – List of the ingredients in the food usually found on the food “Nutrition Facts” label

Nutrition Facts Label – Food package label listing the nutrients in the food

Processed Foods – Foods to which sugar, fat, and/or salt have been added, and/or foods whose natural, edible parts have been removed

Red Flag Ingredients – Ingredients that are added to some processed foods and have a negative health impact

Salt (Sodium) – An essential nutrient for human health; regulates blood pressure, blood volume and the body’s acid/base balance

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
- Cutting board
- Non-latex gloves
- Napkins
- Garbage/compost bag

Lesson Supplies:

- Vocabulary Cards (11)
- Nutrition Facts Label Sign
- Peanut Butter Ingredients Signs (2)
- Looking For Clues Activity Signs (10)



Peanut Butter
 Ingredients Sign



Nutrition Facts
 Label Sign

Teaching Team to Provide:

- Serving tray (or use top of bin as tray)
- Snack ingredients:
 - Whole grain crackers (choose gluten free, nut free)
 - Hummus, (locally made 'ulu/ breadfruit hummus or traditional chickpea hummus; choose gluten free, nut free)
- Spoon/spreader* for spreading hummus onto crackers

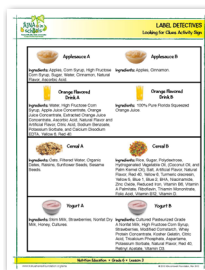
**Please do not bring knives on campus. The only knives allowed are those that are plastic and very well attended by an adult.*

ACCOMPANYING DOCUMENTS

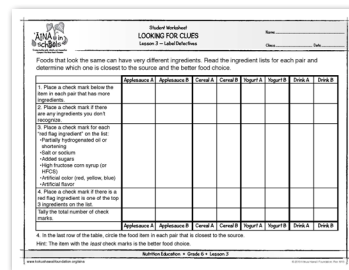
- Student Worksheet: Looking for Clues
- Take Home Letter

ADVANCE PREPARATION

- Lead docent to contact teachers to confirm date/time of lessons.
- Shop for snack ingredients and review materials needed for lesson.
- Ask teachers to have students complete worksheets as a follow-up classwork or homework assignment if needed.
- Ask the teacher to arrange students into groups of 3-5.



Looking for Clues
 Activity Sign



Looking for Clues
 Student Worksheet

INGREDIENT QUANTITIES NEEDED FOR SNACK

How much to buy	Up to 20 students	Up to 30 students	Up to 40 students
Whole Grain Crackers (gluten free, nut free)	1 box	2 boxes	2-3 boxes
Hummus ('ulu or chickpea; gluten free, nut free)	14 oz.	21 oz.	28 oz.

BACKGROUND INFORMATION

Red Flag Ingredients are ingredients that are added to processed foods and have negative health impacts.

Reading the **Ingredient List** is an important way to identify high quality foods and avoid red flag ingredients. The ingredients are listed in order by weight from heaviest to lightest. The first ingredient is what you will be eating the most of. Close to the source foods have fewer ingredients and the source of the food is usually listed first. All of the ingredients should also be easy to recognize and pronounce. Beware of foods with a long list of ingredients, including these red flag ingredients:



Hydrogenated Oils

The majority of trans fats in our diet come from the addition of hydrogen to liquid oils (even healthy oils) through a process called “hydrogenation,” making them more solid.

This process creates fats that are less likely to spoil and ensures longer product shelf life of foods made with them. Like saturated fat, trans fat can increase your risk of cardiovascular disease by changing the ratio of “good” to “bad” blood cholesterol levels. Trans fats are found in many foods such as baked goods, crackers, cookies, and peanut butters. While trans fat occurs naturally in some animal foods, the FDA has recommended banning all artificial trans fats and these should now be out of most processed packaged foods. Although some foods claim to be trans fat free, they can still contain up to half a gram per serving without having to list it on the nutrition label. If the ingredient list has hydrogenated oil, the product contains trans fats.



Added Salt

The main component of salt is sodium, a necessary electrolyte for proper heart, muscle, and nerve function, as well as water balance.

It is recommended that children and adults consume at least 1,000 mg of sodium daily for good health. While the recommended upper limit for adults is 2,300 mg/day (the amount in 1 teaspoon), limits are 1,900 mg/day for 4-8 year olds and 2,200 for 9-13 year olds. Over 75% of sodium is derived from salt added by food manufacturers, and the typical American sodium intake for adults and children alike is between 4,000 and 5,000 mg/ day. Too much sodium can contribute to dehydration, causing fatigue and loss of concentration. Too much sodium can cause high blood pressure, which increases the risk of heart disease and stroke.



Added Sugars

Many processed foods contain added sugars to enhance flavor and palatability. For example, fructose is a component of sucrose (a natural sugar) and is present in fruit. It is added to foods and beverages as high fructose corn syrup due to its low cost and increased sweetening power. However, high fructose corn syrup (also referred to as HFCS) reduces the body’s ability to inhibit food intake and feelings of satiety (satisfaction/fullness). It is also processed as a toxin by the liver. The debate continues regarding the safety of high fructose corn syrup. The increase of sugar in the diet has been linked to obesity, diabetes and cancer.



Artificial Colors and Flavors

Color is an important part of eating. People learn to expect that a strawberry is red, or that a pea is green. The color of food influences perceived flavor (for example, green coloring is added to lime sherbet, which would otherwise be colorless). Below is a list of common artificial colors and flavors and their food label descriptors.

BACKGROUND INFORMATION

CONTINUED

- FD&C Colors: Blue #1 & #2, Green #3, Red #40, Yellow #5 & #6
- Monosodium glutamate (MSG), also called “natural flavoring” on many labels
- Flavor “enhancers”: Hydrolyzed soy protein, autolyzed yeast extract, disodium glutamate

Numerous studies show that some synthetic food additives, whether they are colors, flavors, or fats, can cause learning, behavioral, or other health effects for some individuals. Likewise, there are studies that do not corroborate these results. The FDA has banned some substances due to safety concerns, but the debate continues.

Since most of these added and far from the source ingredients are found in processed foods, “red flagging” them supports the idea that a healthy, close to the source diet is one that is rich in whole, unprocessed foods.

References:

“Chemical Cuisine”: cspinet.org/eating-healthy/chemical-cuisine

“Diet and Nutrition: The Artificial Food Dye Blues”: doi.org/10.1289/ehp.118-a428

Human Nutrition by Revilla, Titchenal, Calabrese, Gibby, and Meinke: pressbooks.oer.hawaii.edu/humannutrition/

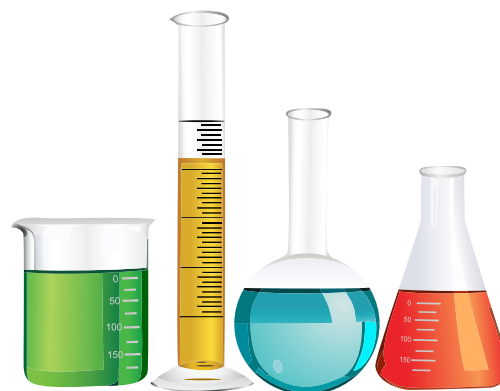
“The Nutrition Source: Added Sugar in the Diet: hsph.harvard.edu/nutritionsource/carbohydrates/added-sugar-in-the-diet/

“Seeing Red: Time for Action on Food Dyes”: cspinet.org/sites/default/files/attachment/Seeing%20Red.pdf

“Shining the Spotlight on Trans Fats”:

hsph.harvard.edu/nutritionsource/what-should-you-eat/fats-and-cholesterol/types-of-fat/transfats/

“US Dietary Guidelines, 2010-2015”: dietaryguidelines.gov



INTRODUCTION

3 MINUTES

"Hello again, we are..." (State docents' names).

"Welcome to your third nutrition lesson as part of the ĀINA In Schools program!"

"Do you remember our last lesson? We learned about the importance of eating a balanced breakfast. Who remembers what four things are important in a balanced breakfast?"

Desired answer: whole fruits and vegetables, complex carbohydrates, minimally-processed proteins, and high quality fats.

"Remember during our first lesson when we defined close to the source? Who can tell me what close to the source means?"

Entertain a few answers. Desired answer: High quality, whole foods that come straight from nature; less processed and more nutritious than processed foods.



"Right! Like the Apple! And which foods are farther from the source?"

Desired answer: Processed foods like the Apple Jills cereal.

"Who can remember the close to the source snack that we tasted last time?" Ask for answers.

Yogurt parfaits!

"Today we will learn about food labels and specifically the ingredient list on a food label. You will become a Label Detective so that you can choose foods that are **CLOSER TO THE SOURCE** and better for our bodies!"



FOOD LABEL CLUES

8 MINUTES

DOCENT NOTES

- Assistant Docent, hold up the vocabulary cards as the class calls out each new term.
- Use the Nutrition Facts Label Sign.

“Most truly close to the source foods, like an apple or banana, don’t even come with a label, but a lot of foods do which is why we need to know how to read food labels and look for clues.”

“Every time we pick up a packaged food, we need to ask ourselves, ‘Is this really good for me?’ ‘How close to the source is this food?’ Sometimes it’s easy to tell if a food is not close to the source, like candy, cookies, or sugary drinks. Sometimes it may be difficult to tell if a food is close to the source, because the words on the package sound healthy or the pictures make you feel like the food is healthy. One important way to know for sure is to read that food’s label.”

“There are two areas on a food label that give clues on where a food falls on the close to the source spectrum.” Hold up 8½” x 11” Nutrition Facts Label Sign as a sample:

- **The Nutrition Facts** (at the top of the food label)
- **The Ingredient List** (at the bottom of the label)



Nutrition Facts Label Sign

Ask, “Who can tell me which areas of the label tells us exactly what is in our food?” Answer: Ingredients List.

Ask, “Who reads the **INGREDIENTS LIST** before eating their food?” Wait for a show of hands.

“If the list of ingredients is very long, this may indicate that the food is farther from the source, with lots of extra ingredients added in processing. Typically close to the source foods have shorter ingredients lists.”

“Ingredients are always listed by weight from the most

to the least. For example, the ingredient list on a loaf of bread will usually have flour as the first ingredient, and something small as the last ingredient, such as salt.”

“Has anyone seen an ingredients list with words that you don’t recognize or can’t pronounce, and you wonder what they are?” Wait for response. “This is sometimes a clue that a food is not close to the source.”

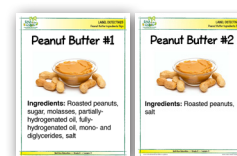
“In summary, when you are looking for a close to the source food, there are 3 clues to look for in the ingredients list:”

1. The fewer the ingredients, the better (or: the shorter the list, the better).
2. The order of ingredients on the ingredients list tells us the relative amounts of each ingredient.
3. The ingredients should be recognizable.

“Right now we’re going to investigate the ingredients of two different types of peanut butter.” Hold up the Peanut Butter Ingredients Signs.

“Here are the ingredients from Peanut Butter #1:”

- “Roasted peanuts”
- “Sugar”
- “Molasses”
- “Partially-hydrogenated oil”
- “Fully-hydrogenated oil”
- “Mono- and diglycerides”
- “Salt”



Peanut Butter Ingredients Signs

“Now, here are the ingredients for Peanut Butter #2:”

- “Roasted Peanuts”
- “Salt”

Ham this part up a little... be amazed at how few ingredients are in Peanut Butter #2: *“That’s it!? Which peanut butter do you think is closer to the source and better for you?”* Desired Answer: Peanut Butter #2!

“That’s right. Peanut Butter #2 is closer to the source than Peanut Butter #1 because.”

- It has only two ingredients: peanuts and salt
- We recognize the ingredients!

IDENTIFYING RED FLAG INGREDIENTS

12 MINUTES

"Now we're going to learn how to identify some of the ingredients in foods that are far from the source and therefore lower in quality. We call these RED FLAGS INGREDIENTS and they give us more clues about our foods."



"A 'red flag' is something to be cautious about. Foods that have RED FLAG INGREDIENTS tell us that food is far from the source. Often times Red Flag Ingredients are easy to spot on the ingredients list because they don't sound familiar or are hard to pronounce. Today, we will look at four common "red flag ingredients" that are added into a lot of packaged foods we see every day."

- **Hydrogenated oils**
- **Added salt**
- **Added sugars**
- **Artificial colors and flavors**

"The first red flag to look out for is HYDROGENATED OILS. These are oils that food manufacturers may add to foods to make them last longer on the shelf at the store or in your house."



"Hydrogenated or partially hydrogenated oils are found in many foods such as bread, peanut butter, crackers, candy, chips, and even sports drinks!"

"There are two reasons to avoid foods containing hydrogenated oils:

1. *The body doesn't recognize it as a food, so it is hard to digest*
2. *It can cause your blood vessels to clog, causing diseases as you get older."*

"Do you remember the ingredients for Peanut Butter #1? There were two different hydrogenated oils: partially-hydrogenated oil and fully-hydrogenated oil. These are both RED FLAG INGREDIENTS."



"Another red flag is ADDED SALT. Some salt occurs naturally in our food but most of the salt we eat is from packaged foods. We all need a little salt to keep us healthy but too much salt can make you dehydrated which causes you to

feel tired and distracted throughout the day. We can be careful of this red flag ingredient by looking out for the word SODIUM on ingredients lists."

"The next red flag we want to look for is ADDED SUGAR. There are many different names for added sugar that you'll find on the ingredient list. Including some you might recognize such as sugar, brown sugar, honey and molasses, and some you might not recognize like fructose, dextrose, maltose, sucrose and high fructose corn syrup."



"These are all sugars. Some sugars come naturally in close to the source foods such as fruit, dried fruit, fruit juices and honey. Some sugars are added into foods, so we call them "added sugars," even if the sugar being added is natural. A useful clue to tell if something is really sugar is if the word has "-ose" at the end of it, such as fructose, sucrose or maltose."

"Now one added sugar is a red flag ingredient in a league of it's own. This is HIGH FRUCTOSE CORN SYRUP. This man-made sweetener is added to many foods such as fruit juice, soda, cereal, bread, yogurt, ketchup, and mayonnaise. It's a dangerous red flag ingredient because of the way our bodies process it. When we eat or drink something containing high fructose corn syrup, our bodies are tricked into thinking we're still hungry or thirsty, so we eat or drink more. High fructose corn syrup is thought to contribute to diseases, even among children."



IDENTIFYING RED FLAG INGREDIENTS

CONTINUED

*“So far we have talked about three “red flags”:
hydrogenated oils, added salt and added sugars. Our
last “red flag” is ARTIFICIAL INGREDIENTS!”*

*“ARTIFICIAL INGREDIENTS are colors or dyes, and
flavors. Food manufacturers sometimes put these
chemicals into foods to make them look more
attractive or make the flavors stronger.”*

*“Can someone name a color or dye you would see
in a sports drink or candy?” (Answers: Red, blue,
yellow).*

*“Often artificial colors have
a number assigned to them
after the name of the color
such as Yellow #6 or Red
#40, this is a good clue that
the food may be far from the
source.”*



*“Artificial colors and flavors are chemicals that your
body doesn’t recognize, and they are usually found
in lower quality foods that are FAR FROM THE
SOURCE. Eating too many of these foods can make
it difficult to stay healthy.”*

*“Are we suggesting that you never eat or drink foods
with hydrogenated oils, added salt and sugars or
artificial ingredients again? NO! But we want you to
be aware of what you are putting into your body by
reading ingredients and thinking about what you have
learned today.”*

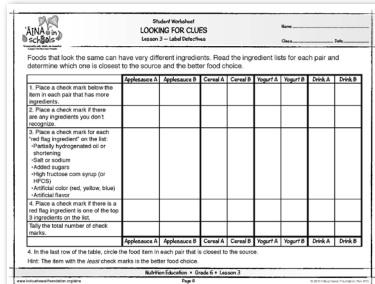
*“Now we’re going to do an activity
where you will be label detectives
and need to look for clues on the
ingredients list to figure out which food
item is closer to the source!”*



COMPARING FOOD LABELS

15 MINUTES

Have the class turn to the Looking For Clues Student Worksheet in their workbooks.



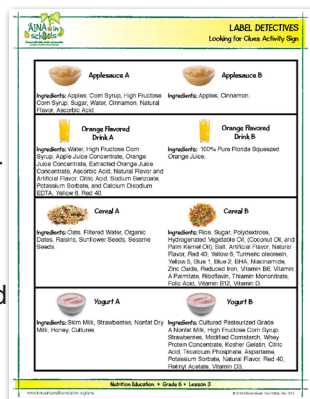
Looking for Clues Student Worksheet

1. Divide students into groups of 3 to 5 students.

2. Distribute to each group a Looking For Clues Activity Sign. Signs include ingredient lists for four pairs of similar food items:

- Apple Sauce
- Cereal
- Yogurt
- Orange Flavored Drink

3. Instruct students to start filling out their Looking For Clues Student Worksheets by comparing the ingredients lists of each pair to determine which item is closer to the source; assist by walking around and helping students find the red flags ingredient clues.



Looking for Clues Activity Sign

When groups have finished all four comparisons, ask, "What did you find out about the two different kinds of applesauce? Which one was closer to the source? Why?"

"Which cereal had less ingredients? Were there any red flags? Which one is closer to the source and better for your body?"

"What about the yogurt comparison? Which one had more red flag ingredients?"

"What did you find out about the orange flavored drink? Which one is a closer to the source beverage?"

ACTIVITY TIPS AND KEY

The following items are closest to the source:

- Applesauce B
- Cereal A
- Yogurt A
- Drink B



"Remember, far from the source foods and beverages usually have long lists of ingredients, with lots of words we may not recognize. Close to the source foods and beverages have much shorter lists and we recognize the ingredients."

"Great job being label detectives! Now we'll get to try a close to the source snack!"



CLOSE TO THE SOURCE SNACK

5 MINUTES

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.



Tell the students that they are lucky because today they get to sample a CLOSE TO THE SOURCE, WHOLE GRAIN snack made from the whole grains!

Explain that the food sample is very close to its source:

- The crackers are made with whole grains.
- The hummus is made with chickpeas (aka garbanzo beans) or 'ulu (breadfruit), olive oil, tahini (crushed sesame seeds), lemon juice, and salt. (See ingredients list of both items for more information.)

As students are eating their snack, read the nutritional information on whole grains from the back of the cracker box and discuss with students. Discuss with students what other close to the source foods they could eat with a whole grain cracker. Share how they could prepare hummus at home themselves.

ĀINA VIDEOS

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

CLOSING

2 MINUTES

Provide a quick review:

- Look for clues on the ingredients list of food labels
 - The fewer the ingredients, the better;
 - The ingredients should be recognizable.
- “Red Flag Ingredients” to watch out for are:
 - Hydrogenated oils
 - Added Salt
 - Added sugars – especially High Fructose Corn Syrup
 - Artificial colors and flavors

Describe the Take Home Letter:

- “Share what you learned today with your family and practice reading labels together.”
- Encourage students to create their own close to the source recipe inspired by this lesson. 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 being Label Detectives!

THANK YOU!



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.
 - 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 any ‘ĀINA Recipe Challenge submissions and turn in to KHF staff at the next docent training.

ADDITIONAL RESOURCES

Books

- ***Kid Food: The Challenge of Feeding Children in a Highly Processed World*** by Bettina Elias Siegel
Written for parents, this book explores the many challenges of raising healthy eaters.
- ***The Pantry Principle: how to read the label and understand what's really in your food*** by Mira Dessy
This book for adults discusses several food ingredients, outlining why we should limit red flag ingredients and offers healthy alternatives.

Lesson Plans & Curricula

- **“Chemical Cuisine” Lesson from the In Defense of Food Curriculum:** pbslearningmedia.org/collection/the-idof-curriculum/
This lesson is about the benefits of eating more whole foods and fewer highly processed foods. One activity has students read ingredients lists and guess which processed foods they come from.
- **“Lesson 3: Preservatives” in What’s on Your Plate? Curriculum Guide:** whatsonyourplateproject.org
This includes a discussion on processed foods and activities investigating ingredient labels.
- **“Sugar Shocker Education Kit,” Alberta Health Services:** albertahealthservices.ca/assets/info/nutrition/if-nfs-sugar-shocker-kit.pdf
A collection of activities that promoting label reading and making water one’s beverage of choice.

Videos

- **“ĀINA In Schools Close to the Source Snack Whole Grain Crackers & Hummus,” Kōkua Hawai'i Foundation:** kokuahawaiifoundation.org/ainavideos
This short video showcases whole grain crackers and hummus as a simple snack that’s part of the Energy Foods Group.
- **“GrowingGreat: Graph Your Groceries,” GrowingGreat:** youtube.com/watch?v=mzuRXrSN6Ug
This video guides students through examining and graphing the number of ingredients on food labels.

- **“Read Labels,” Nourish Video Series:** nourishlife.org/2014/01/video-nadine-burke-read-labels/
Dr. Nadine Burke shares her tips on reading nutrition facts labels and ingredients lists.
- **“Reading Nutrition Labels for Kids Part 1 HPC: E12,” Katie Kimball:** youtube.com/watch?v=KIN0E1nRpTE
This 15-minute video for kids starts with an in-depth explanation of ingredients lists and red flag ingredients. Includes a discussion of calories.
- **“Salt, Sugar, Fat,” In Defense of Food Curriculum:** pbslearningmedia.org/resource/in-defense-of-food-clip-02/salt-sugar-fat-in-defense-of-food/
A short video for kids about how and why highly processed foods with added salt, sugar, and fats are designed to make us crave them.
- **“Whole and Healthy,” Nourish Video Series:** nourishlife.org/2011/03/whole-healthy
Dr. Nadine Burke discusses the difference between processed and whole, “close to the source” foods.

Additional Resources

- **“Figuring out Food Labels for Kids,” KidsHealth:** kidshealth.org/en/kids/labels.html?WT.ac=p-ra
Describes what information kids can get out of reading food labels.
- **“The Nutrition Source: Added Sugar in the Diet,” Harvard School of Public Health:** hsph.harvard.edu/nutritionsource/carbohydrates/added-sugar-in-the-diet/
Explains the many sources of added sugars one can discover in foods by reading food labels.
- **“Nutrition Guidelines for Food, Beverages,” Hawai'i State Department of Education:** hawaiipublicschools.org/TeachingAndLearning/HealthAndNutrition/NutritionStandards/Pages/home.aspx
Outlines the guidelines for foods and beverages provided and sold on campus. Caffeine, artificial colors, and artificial flavors are some of the red flag ingredients prohibited in beverages.

Find more at
kokuahawaiifoundation.org/ainalessons