

SUPPLEMENTS

# INTRO TO DIETARY SUPPLEMENTS

The "Intro to Dietary Supplements" module introduces students to the rapidly growing world of dietary supplements, providing a foundational understanding of what they are, how they are regulated, and their potential benefits and risks. This module highlights the importance of making informed decisions when considering supplements, emphasizing the need to read labels carefully and consult reliable sources. A notable aspect of this module is its focus on the differences between dietary supplements and medications, a distinction that is crucial for consumer safety. Developed by educators and FDA experts, this module connects directly to LifeSmarts topics like health, consumer awareness, and safety. With engaging videos, real-world examples, and interactive discussions, teachers will find this module invaluable for helping students navigate the complexities of dietary supplements and prepare for LifeSmarts competitions.



## DISCUSSION QUESTIONS

- Why is it important to consult a healthcare provider before taking dietary supplements? Discuss the potential risks of taking supplements without professional guidance.
- Explain the difference between a dietary supplement and a prescription drug. How does the regulation of these two categories differ in terms of safety and efficacy?

## CHALLENGE QUESTION

- Research a case where a dietary supplement was found to be harmful or ineffective. What actions were taken by the FDA or other regulatory bodies, and what was the outcome?



**See this lesson and  
more at LifeSmarts U.**

This lesson was developed by educators and experts in conjunction with the U.S. Food & Drug Administration

## VOCABULARY

- Dietary Supplement
- Supplement Facts Label
- Probiotics
- Vitamins
- Minerals
- Herbs or Botanicals
- Amino Acids
- Enzymes
- DSHEA (Dietary Supplement Health and Education Act)
- Adverse Reaction

## ACTIVITIES

- Product Categories
- Supplements vs. Food

## VIDEOS

\* See reverse side for list

## VIDEO LINKS

Dietary Supplements: What You Need to Know (1:43)  
<https://www.youtube.com/watch?v=-tY1Ln9JfVs>

Drugs vs. Supplements (1:19)  
<https://www.webmd.com/vitamins-and-supplements/video/drugs-vs-supplements>

The Real Story of Snake Oil (1:44)  
<https://www.youtube.com/watch?v=LaDsOJATX3A>

Understand Changes to Dietary Supplement Labels (2:02)  
<https://www.youtube.com/watch?v=kLploVqHjBA>

Understanding Pre and Probiotics (3:14)  
<https://www.youtube.com/watch?v=U1p4YMU3vWk>

Vitamins and Minerals – Nutrition Fundamentals (6:58)  
<https://www.youtube.com/watch?v=qgNURQFWNWM>

Dietary Supplement Practicum (5 of 21): Drugs vs. Foods vs. Dietary Supplements  
<https://www.youtube.com/watch?v=3EtmTEHZiOY>

Osmosis.org: Prebiotics & Probiotics  
<https://www.youtube.com/watch?v=0z47wLZ4-O4>

## OTHER WEB LINKS

MyPlate Plan  
<https://www.myplate.gov/myplate-plan>

Dietary Supplement Products & Ingredients  
<https://www.fda.gov/food/dietary-supplements/dietary-supplement-products-ingredients>

Dietary Supplement Ingredient Advisory List  
<https://www.fda.gov/food/dietary-supplements/information-select-dietary-supplement-ingredients-and-other-substances>

FDA Alerts, Advisories & Safety Information  
<http://www.fda.gov/food/recalls-outbreaks-emergencies/alerts-advisories-safety-information>

FDA Consumer Updates – Health Fraud  
<https://www.fda.gov/consumers/health-fraud-scams/consumer-updates-health-fraud>

How to Read a Supplement Label  
<https://qualitymatters.usp.org/how-read-supplement-label>

NIH Dietary Supplement Label Database  
<https://dslid.od.nih.gov>

## DISCUSSION QUESTIONS (SAMPLE ANSWERS)

- A: It is important to consult a healthcare provider before taking dietary supplements because supplements can interact with prescription medications, cause side effects, or exacerbate existing health conditions. For example, taking high doses of certain vitamins or minerals can lead to toxicity, and some supplements may interfere with the effectiveness of medications. A healthcare provider can help determine the appropriate dosage and ensure that the supplement is safe to take based on an individual's health status and needs. Without professional guidance, there is a risk of overconsumption, adverse reactions, and potentially harmful interactions, which could compromise a person's health.
- A: A dietary supplement is a product intended to supplement the diet and may include vitamins, minerals, herbs, amino acids, and enzymes. In contrast, a prescription drug is a medication prescribed by a healthcare provider to treat, cure, or prevent a specific medical condition. The regulation of these two categories differs significantly: prescription drugs must undergo rigorous testing for safety, efficacy, and quality before they can be approved by the FDA for public use. Dietary supplements, however, do not require FDA approval before being marketed. The responsibility for ensuring the safety of dietary supplements lies with the manufacturers, and the FDA only steps in after a product has been introduced to the market if safety concerns arise. This difference in regulation means that dietary supplements are not held to the same safety and efficacy standards as prescription drugs.

## CHALLENGE QUESTION (SAMPLE ANSWER)

- **An example is the case of ephedra, a popular weight-loss supplement that was found to cause serious health risks.**  
<https://ods.od.nih.gov/factsheets/EphedraandEphedrine-HealthProfessional/>

### Key Points:

**Harmful Effects:** Ephedra, a natural stimulant, was widely used for weight loss and athletic performance enhancement. However, it was linked to numerous cases of heart attacks, strokes, and even deaths due to its powerful stimulant effects on the cardiovascular system.

**Regulatory Actions:** In 2004, after reviewing the scientific evidence and numerous adverse event reports, the FDA banned the sale of dietary supplements containing ephedra. The decision was based on the significant health risks posed by the supplement, which outweighed its benefits.

**Outcome:** The ban on ephedra was a landmark decision, as it was the first time the FDA banned a dietary supplement due to safety concerns. This action led to increased awareness about the potential dangers of dietary supplements and reinforced the importance of regulatory oversight in protecting public health.



# SCIENCE AND OUR FOOD SUPPLY

## Supplements - Intro to Dietary Supplements



### Supplement Facts

Serving Size 1 Gelcap  
Servings Per Container 100

	Amount Per Serving	% Daily Value
Vitamin A (as retinyl acetate and 50% as beta-carotene)	900 mcg	100%
Vitamin C (as ascorbic acid)	90 mg	100%
Vitamin D (as cholecalciferol)	20 mcg (800 IU)	100%
Vitamin E (as dl-alpha tocopheryl acetate)	15 mg	100%
Thiamin (as thiamin mononitrate)	1.2 mg	100%
Riboflavin	1.3 mg	100%
Niacin (as niacinamide)	16 mg	100%
Vitamin B <sub>6</sub> (as pyridoxine hydrochloride)	1.7 mg	100%
Folate	400 mcg DFE (240 mcg folic acid)	100%
Vitamin B <sub>12</sub> (as cyanocobalamin)	2.4 mcg	100%
Biotin	3 mcg	10%
Pantothenic Acid (as calcium pantothenate)	5 mg	100%



Teacher's Guide for High School Classrooms  
1<sup>st</sup> Edition



# OVERVIEW OF ACTIVITIES

The activities are written in this easy-to-understand format.

**MODULE 2: DIETARY SUPPLEMENTS, RISKS, REALITIES, AND REPORTING**

## ACTIVITY 2: DIETARY SUPPLEMENTS AND ADVERTISING

**TIME** Three or four 45-Minute Class Periods

**ACTIVITY AT A GLANCE**

In this activity, students will learn about the dangers of some dietary supplements and their ingredients and review advertisements for dietary supplements. Students will create a video Public Service Announcement (PSA) for their peers about a specific dietary supplement, its dangers to learn, and how it is advertised.

**TIME TO TUNE IN**

Study: Some Items Being Sold as Dietary Supplements Could Be At Risk For Serious Harm (2:08)  
[https://www.youtube.com/watch?v=9Q8b11uE8k4&feature=emb\\_logo](https://www.youtube.com/watch?v=9Q8b11uE8k4&feature=emb_logo)

The Simple Truth: Decoding the Dietary Supplement Industry (3:00)  
[https://www.youtube.com/watch?v=9Q8b11uE8k4&feature=emb\\_logo](https://www.youtube.com/watch?v=9Q8b11uE8k4&feature=emb_logo)

Supplements #11 - Dietary Supplement Battle - U.S. Anti-Doping Agency (2:46)  
[https://www.youtube.com/watch?v=9Q8b11uE8k4&feature=emb\\_logo](https://www.youtube.com/watch?v=9Q8b11uE8k4&feature=emb_logo)

The dangers of dietary supplements that need to be known about (2:12)  
[https://www.youtube.com/watch?v=9Q8b11uE8k4&feature=emb\\_logo](https://www.youtube.com/watch?v=9Q8b11uE8k4&feature=emb_logo)

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**TIME:** The approximate amount of time needed to perform the activity.

**ACTIVITY AT A GLANCE:** Briefly summarizes the activity.

**TIME TO TUNE IN:** Shows the URL for an online video related to that activity.

**MATERIALS:** Includes the items needed to perform the activity.

**ADVANCE PREPARATION:** Indicates what you need to do before conducting the activity.

**INTRODUCTION:** Provides fun, innovative suggestions for introducing the activity. Where provided, suggested teacher dialogue is indicated by *boldface italics*.

**MODULE 2: DIETARY SUPPLEMENTS, RISKS, REALITIES, AND REPORTING**

## DIETARY SUPPLEMENTS AND ADVERTISING

**GETTING STARTED**

**MATERIALS**

- Internet Access
- Dietary Supplements and Advertising Worksheet
- Credible Source Guide
- Presentation Rubric

**ADVANCE PREPARATION**

1. Study your class text, small groups.
2. Secure internet access.
3. Make copies of the **Dietary Supplements and the Media** worksheet, **Credible Source Guide**, and **Presentation Rubric**.

**INTRODUCTION**

There may be dietary supplements to lose weight or build muscle; however, using these supplements can put them at risk for serious harm. In this activity, students will research a dietary supplement that could be used to lose weight or build muscle, and look at the possible harm that could result from consuming that supplement. Students will also assess the credibility of information about that supplement from various sources and learn where to find reliable information about supplements.

All these questions to begin the discussion about supplements and advertising:

1. *Do you know of any dietary supplements that have been used and why they use them?*
2. *Are you aware of any harm associated with using supplements? If so, please refer to specific dietary supplements for this discussion.*
3. *Have you seen any ads in magazines or on TV that promote dietary supplements, and if so, which supplements do they promote?*

NOTE: Students can either research a supplement of their choice or you can provide a list of dietary supplements. The following website, maintained and frequently updated by the United States Anti-Doping Agency, has a list of high-risk supplements for athletes. It requires a free registration.  
<http://supplements11.org/high-risk-list>

**HIGH SCHOOL**

**MODULE 2: DIETARY SUPPLEMENTS, RISKS, REALITIES, AND REPORTING**

## DIETARY SUPPLEMENTS AND ADVERTISING

**STUDENT PROCEDURE**

1. Everyone should have a copy of the **Dietary Supplements and Advertising** worksheet, the **Credible Source Guide**, and the **Presentation Rubric**. Read each of the statements in the **Presentation Guide** section of your worksheet and in the **Before** column, write whether you Agree (A) or Disagree (D) with each statement.
2. Watch the first video, *Severely Using Dietary Supplements*.  
<https://www.youtube.com/watch?v=9Q8b11uE8k4>
3. After you watch the video, go back to the statements on the **Presentation Guide** and compare your opinions with information from the video. In the **After** column, write whether the information from the video Agrees (A) or Disagrees (D) with the Statement.
4. In the space under each statement, cite the information from the video that supports or refutes your original idea.  
Watch the second video, *The Simple Truth: Decoding the Dietary Supplement Industry*.  
<https://www.youtube.com/watch?v=9Q8b11uE8k4>
5. The video highlights several problems with dietary supplements, when you finish viewing the video, discuss them with your group.
6. Decide with your group to research either a supplement used for weight loss or muscle building. You will research information about the harmful effects of that dietary supplement and its ingredients, as well as how that supplement is advertised.
7. Respond to the **Research Questions on the Dietary Supplements and Advertising** worksheet; your research should address all of the questions about your supplement, as well as how the supplement is advertised.
8. When you have completed your research, use the information to prepare a video Public Service Announcement (PSA) to explain why your chosen dietary supplement should not be used by teenagers, and how that supplement is advertised. Each PSA should include the credible source(s) used for preparation.
9. Watch the following videos that will help you learn about PSAs.  
Tip for creating an effective video PSA:  
<https://www.youtube.com/watch?v=9Q8b11uE8k4>  
*Best Student Made PSA Ever*  
<https://www.youtube.com/watch?v=9Q8b11uE8k4>  
Tip for creating an effective video PSA:  
<https://www.youtube.com/watch?v=9Q8b11uE8k4>
10. Use the following questions to develop your PSA:
  - Who is your audience?
  - What is your message?
  - What PSA format from the first video will best convey your message?
    - Voiceover PSA
    - Live Action
    - The "Silent Treatment"
  - What part of your research will you use?
    - What is your script?
    - What should we all see or see on your stop(s) sketch PSA? (sketch by frame)
    - What props do you think you might need?
    - What is your resolution plan?
    - What is your visual display plan?
11. Once your PSA plan is complete, you can film the PSA, make your edits, and share your finished product.
12. After you have viewed all of the PSAs, review the reasons why you should avoid using these dietary supplements. Also discuss the advertisements you reviewed and how easy it is to be misled by the media.
13. Watch the video, *Supplements #11 - Dietary Supplement Battle - U.S. Anti-Doping Agency*.  
<https://www.youtube.com/watch?v=9Q8b11uE8k4>

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**STUDENT PROCEDURE:** Gives the step-by-step process for the activity.

**REVIEW:** Uses interesting questions to guide students through a review of what they learned in the activity.

**SUMMARY:** Summarizes key concepts learned in the activity.

**EXTENSIONS:** Suggest activities to help students learn more about the topic.

**RESOURCES:** Provide references to online resources for the activity or for further study.

**UP NEXT:** Gives a preview of the next activity.

**MODULE 3: CAFFEINE, DIETARY PRODUCTS, AND BOTANICALS (SHORTCUTS OR QUICKSTART)**

## ENERGY PRODUCTS

**REVIEW**

Caffeine is a stimulant found in several foods, beverages, and dietary supplements that are marketed to teens. Caffeine is also a habit-forming substance often found in energy products, and it can have significant effects on body systems including the endocrine and urinary systems.

**SUMMARY**

Caffeine effects intensity with increased amounts that can be stressful, even life-threatening. It's important to read product labels carefully and know what an energy product is (dietary supplement or beverage) before consuming it.

**EXTENSIONS**

Students could do one or more of the following activities:

1. Create an infographic about a caffeine product and the effect of the stimulant on teens. Refer to the **Caffeine Infographic Planning Guide** on page 63.
2. Create a video or PowerPoint presentation to demonstrate the side effects of consuming too much caffeine.
3. Prepare mixtures of various caffeine concentrations and calculate the final caffeine concentration.

**UP NEXT**

Next that you learn more about caffeine and how it affects your health, let's learn more about some potent botanicals.

**RESOURCES**

- 10 Common Energy Drink Ingredients: What You Need to Know  
<http://www.eatingwell.com/story/2018/08/10-common-energy-drink-ingredients-what-you-need-to-know>
- Caffeine? Not So Fast!  
<https://www.youtube.com/watch?v=9Q8b11uE8k4>
- Caffeine: Facts, Usage, and Side Effects  
<https://www.caffeinemonitor.com/caffeine-in-my-diet/>
- Dangers of Making Sports And So Much Caffeine  
<https://www.cdc.gov/od/ocers/dangers-mixing-sports-and-too-much-caffeine>
- Dietary Supplements for Energy and Endurance: Fact Sheet for Consumers  
<https://fda.onlinelibrary.wiley.com/doi/10.1002/psp.1427>
- Dietary Supplements for Energy and Endurance: Performance and Safety for Health Professionals  
<https://fda.onlinelibrary.wiley.com/doi/10.1002/psp.1427>
- Energy Beverages: Content and Safety  
<https://www.cdc.gov/od/ocers/energy-beverages/>
- Energy Drink Ingredients and What They Do  
<https://www.caffeinemonitor.com/energy-drink-ingredients/>
- Energy Drinks  
<https://www.cdc.gov/od/ocers/energy-drinks/>
- Sports Drinks and Energy Drinks for Children and Adolescents: Are They Appropriate?  
<https://pediatrics.aappublications.org/content/127/6/1182>
- Getting the Energy: How Much Caffeine is Too Much?  
<https://www.fda.gov/consumers/consumer-updates/pilling-beans-how-much-caffeine-too-much>
- Energy Drink Labels: Consumer Misleading  
<https://www.fda.gov/oc/2013/08/01/energy-drink-labels-sometimes-misleading/>

**HIGH SCHOOL**

## Definitions, Supplement Facts label, Categories, Claims

For this module, it is recommended that teachers will have taught the following key concepts: the structure and properties of matter; what happens in chemical reactions; the human body is a system of interacting systems; basic human nutrition needs; metric system

## BACKGROUND INFORMATION



**What is a Dietary Supplement?** introduces dietary supplements as a category of products that are heavily marketed to consumers, and which should only be taken with a healthcare provider's advice.

## ACTIVITY 1



**Product Categories** helps teenagers distinguish characteristics of products that they might use.



## Time to Tune In

*Dietary Supplements: What You Need to Know* (1:43)

<https://www.youtube.com/watch?v=tY1Ln9JfVs>

*Drugs vs. Supplements* (1:19)

<https://www.webmd.com/vitamins-and-supplements/video/drugs-vs-supplements>

*The Real Story of Snake Oil* (1:44)

<https://www.youtube.com/watch?v=LaDsOJATX3A>

## ACTIVITY 2



**Supplements vs. Food** helps teens evaluate and compare nutrients that could be obtained through foods or dietary supplements.



## Time to Tune In

*Understand Changes to Dietary Supplement Labels* (2:02)

<https://www.youtube.com/watch?v=kLploVqHjBA>

*Understanding Pre and Probiotics* (3:14)

<https://www.youtube.com/watch?v=U1p4YMU3vWk>

*Vitamins and Minerals – Nutrition Fundamentals* (6:58)

<https://www.youtube.com/watch?v=qgNURQFWNWM>



## BACKGROUND INFORMATION

### What is a Dietary Supplement?

#### Dietary Supplements: Defined

A dietary supplement is a product that is used to supplement, or *add to*, a person’s diet. But a dietary supplement is *not* intended to be a substitute for an actual food or a meal.

To be categorized as a dietary supplement, a product must be able to be “ingested” – in other words, something you can eat or drink. Something that is intended to be injected or applied topically (like to the skin or hair) would *not* be a dietary supplement.

- Vitamins and minerals are common dietary supplements.
- Other dietary supplements include herbs or botanicals and their extracts and constituents, amino acids, live microbials (commonly referred to as “probiotics”), and enzymes.

Dietary supplements come in a variety of forms such as tablets, capsules, softgels, gelcaps, powders, and liquids. They can provide nutritional benefit by helping you meet daily requirements for the nutrients your body needs to function. But it is important to remember that food should be the primary source of nutrients. A healthy diet starts with eating a variety of foods.

Note: Many foods and dietary supplements contain the same components, but a product is classified as a dietary supplement when that component (e.g., vitamin D) is separate from the food (e.g., milk). Foods that are “fortified” with vitamins/minerals are still considered foods, not dietary supplements.

A dietary supplement might include other ingredients, for example, inactive or “filler” ingredients such as silica, which helps the ingredients bind together during manufacturing. These other ingredients are regulated as food additives.

### Dietary Supplements: What They Include

Dietary Supplement Categories	Example of a Specific Dietary Supplement component in each category	Other Product Classification (not a Dietary Supplement) that might contain the same component	Example of other product not classified as a dietary supplement
Vitamins	Vitamin C	Cosmetics	Facial serum containing vitamin C
Minerals	Iron	Drug	Iron injection
Herbs or Botanicals, Extracts and Constituents	Caffeine (from green tea, for example)	Drugs	Over-the-counter (OTC) stimulant drugs
Live microbials (“probiotics”)	Lactobacillus acidophilus	Food	Yogurt containing lactobacillus acidophilus
Amino Acids	Lysine	Food	Poultry
Other (such as fish oil, glucosamine, etc.)	Omega 3 fatty acids	Food	Salmon

# BACKGROUND INFORMATION



## The Dietary Supplement Health and Education Act (DSHEA)

Unlike prescription medications, under DSHEA, FDA does not have the authority to approve dietary supplement

products. FDA strives to achieve the right balance between preserving consumers' access to lawful supplements, while still upholding the agency's obligation to protect the public from unsafe and unlawful products.

### Connecting the (Historical) Dots to DSHEA

**1906** The **Pure Food and Drug Act**, a law a quarter-century in the making, prohibited interstate and foreign commerce in adulterated and misbranded food and drugs. It also positioned the Bureau of Chemistry (predecessor of FDA) as the first federal agency to focus primarily on consumer protection.

**1938** The U.S. Congress passed the **Federal Food, Drug, and Cosmetic Act** (FD&C Act) to replace the Food and Drugs Act. This important updated legislation enhanced the consumer protections for food and drugs and broadened the scope of products under FDA's oversight to include medical devices and cosmetics.

**1976** The **Vitamins and Minerals Amendments** (led by Sen. William Proxmire of Wisconsin) prohibited FDA from limiting the potency of vitamins and minerals or classifying those that exceeded a specific potency threshold as drugs. It also prevented FDA from limiting any combination of vitamins or minerals or other food ingredients (except in products used for childhood diseases or by pregnant or lactating women).

**1994** The **Dietary Supplement Health Education Act** (DSHEA) was signed into law. DSHEA created a new regulatory framework for the safety and labeling of dietary supplements. It defined a **dietary ingredient** as a vitamin, mineral, herb or botanical, amino acid, or a dietary substance used to supplement the diet by increasing total dietary intake (for example, food substances). A dietary ingredient can also be a concentrate, metabolite, constituent, extract, or combination of these ingredients.



DSHEA enabled FDA to take action against unsafe or otherwise adulterated or misbranded dietary supplements. But unlike the approach taken for drugs, FDA is responsible for demonstrating that a dietary supplement is adulterated prior to taking any enforcement action. Because dietary supplements are under the "umbrella" of foods, FDA's Center for Food Safety and Applied Nutrition (CFSAN) regulates both *finished* dietary supplements and the *individual ingredients* that a supplement might contain. FDA regulates dietary supplements under a different set of regulations than those covering "conventional" foods and drug products.

## Responsibility of the Manufacturing Company

Under DSHEA, it is the companies that manufacture or market dietary supplements that are responsible for ensuring that the products they sell are **safe and otherwise lawful**. So unlike FDA's role in regulating prescription drugs, FDA does *not* have the authority to approve dietary supplements or their labeling. In fact, companies can often introduce new dietary supplement products to market without even notifying FDA.

In most cases, FDA's role with a dietary supplement product begins *after* the product enters the marketplace. Specifically, FDA is responsible for taking action against any "adulterated" or "misbranded" dietary supplement. For example, if a product is "adulterated," it might mean that the product contains contaminants or is otherwise unsafe; if a product is "misbranded," it could mean that the labeling is false or misleading. In these cases, FDA can take action to **remove products from the market**.



# BACKGROUND INFORMATION

## The Nutrients You Need: A Closer Look

Food should always be the **first choice** for getting the nutrients you need. You can learn how much you need from each food group with a personalized **MyPlate Plan**, based on your age, sex, height, weight, and physical activity level. Beneficial vitamins and minerals can be found in nutrient-dense foods such as fruits, vegetables, and whole grains.

You can refer to the Nutrition Facts label on food packages, which is a helpful tool to evaluate nutrients you are getting from food. The label lists key nutrients in a food and how much a particular food contributes to the recommended amount of that nutrient in the daily diet.


Someone might choose to take a dietary supplement to help reach the daily recommended amount of certain nutrients if they are unable to get them from their diet. For example, someone with lactose intolerance might find it challenging to consume the daily recommended amount of calcium, a key nutrient found in dairy products.

Vitamins and minerals help your body to work properly. **Vitamins** occur naturally in plants and animals and can also be produced synthetically. **Minerals** are inorganic elements that come from the soil and water, and they are absorbed by plants or eaten by people and animals. Your body needs larger amounts of some minerals like calcium. Other minerals are called **trace minerals** because you only need small amounts. Trace minerals include chromium, copper, iodine, iron, selenium, and zinc.

FDA's **Vitamins and Minerals charts** offer a quick way to track down foods that contain the specific nutrients you may want to add to *your* diet.

VITAMIN	WHAT IT DOES	WHERE IT IS FOUND	DAILY VALUE*
<b>Vitamin C</b>	<ul style="list-style-type: none"> <li>• Antioxidant</li> <li>• Collagen and connective tissue formation</li> <li>• Immune function</li> <li>• Wound healing</li> </ul>	<ul style="list-style-type: none"> <li>• Fruit (e.g., cantaloupe, citrus fruits, kiwifruit, and strawberries)</li> <li>• Juices (e.g., oranges, grapefruit, and tomato)</li> <li>• Vegetables (e.g., broccoli, Brussels sprouts, peppers, and tomatoes)</li> </ul>	90 mg
<b>Vitamin D</b> <i>Nutrient to get more of</i>	<ul style="list-style-type: none"> <li>• Blood pressure regulation</li> <li>• Bone growth</li> <li>• Calcium balance</li> <li>• Hormone production</li> <li>• Immune function</li> <li>• Nervous system function</li> </ul>	<ul style="list-style-type: none"> <li>• Eggs</li> <li>• Fish (e.g., herring, mackerel, salmon, trout, and tuna)</li> <li>• Fish oil and cod liver oil</li> <li>• Fortified dairy products</li> <li>• Fortified margarine</li> <li>• Fortified orange juice</li> <li>• Fortified plant-based beverages (e.g., soy, rice, and almond)</li> <li>• Fortified ready-to-eat cereals</li> <li>• Mushrooms</li> <li>• Pork</li> </ul>	20 mcg**
<b>Vitamin E</b>	<ul style="list-style-type: none"> <li>• Antioxidant</li> <li>• Formation of blood vessels</li> <li>• Immune function</li> </ul>	<ul style="list-style-type: none"> <li>• Fortified cereals and juices</li> <li>• Green vegetables (e.g., spinach and broccoli)</li> <li>• Nuts and seeds</li> <li>• Peanuts and peanut butter</li> <li>• Vegetable oils</li> </ul>	15 mg**
<b>Vitamin K</b>	<ul style="list-style-type: none"> <li>• Blood clotting</li> <li>• Strong bones</li> </ul>	<ul style="list-style-type: none"> <li>• Green vegetables (e.g., broccoli, kale, spinach, turnip greens, collard greens, Swiss chard, mustard greens)</li> </ul>	120 mcg

\* The Daily Values are reference amounts of nutrients to consume or not to exceed each day.  
 \*\* Units of measurement have been updated. For more information, visit: <https://go.usa.gov/XYV73>.

 U.S. FOOD & DRUG ADMINISTRATION  
[www.fda.gov/nutritioneducation](http://www.fda.gov/nutritioneducation)

Interactive Nutrition Facts Label • March 2020  
 Vitamins and Minerals Chart 4

The National Academies of Sciences, Engineering, and Medicine have created in-depth nutrient charts that offer Recommended Dietary Allowances (RDA) depending on age and life stage. These not only show the amount of nutrients you *do* need, but also “how much is too much.”

The nutrient charts are organized by:

1. What You Need
  - For Vitamins**
  - For Minerals (Elements)**
  - For Water and Macronutrients**
2. Upper Limits
  - Tolerable Upper Intake Level for Vitamins**
  - Tolerable Upper Intake Level for Minerals (Elements)**

### There are two types of vitamins.

- **Fat-soluble vitamins** — A, D, E, and K — are dissolved, transported, and stored similar to how fats are used in your body.
- **Water-soluble vitamins** — C and the B-complex vitamins (such as vitamins B6, B12, niacin, riboflavin, and folate) — are generally excreted rapidly by the body and most are not as easily stored.



# BACKGROUND INFORMATION



## The Dietary Supplement Facts Label: What It Includes

Dietary supplements must be labeled with a **Supplement Facts** label that is specific for the contents in that dietary supplement.

### Supplement Facts

1 Serving Size 1 Gelcap Servings Per Container 100		
	Amount Per Serving	% Daily Value
Vitamin A (as retinyl acetate and 50% as beta-carotene)	900 mcg	100%
Vitamin C (as ascorbic acid)	90 mg	100%
Vitamin D (as cholecalciferol)	20 mcg (800 IU)	100%
Vitamin E (as dl-alpha tocopheryl acetate)	15 mg	100%
2 Thiamin (as thiamin mononitrate)	1.2 mg	100%
Riboflavin	1.3 mg	100%
Niacin (as niacinamide)	16 mg	100%
Vitamin B <sub>6</sub> (as pyridoxine hydrochloride)	1.7 mg	100%
Folate	400 mcg DFE (240 mcg folic acid)	100%
Vitamin B <sub>12</sub> (as cyanocobalamin)	2.4 mcg	100%
Biotin	3 mcg	10%
Pantothenic Acid (as calcium pantothenate)	5 mg	100%
3 Other ingredients: Gelatin, lactose, magnesium stearate, microcrystalline cellulose, FD&C Yellow No. 6, propylene glycol, preservatives (propylparaben and sodium benzoate).		

#### Group 1

##### Servings

The “Serving Size” and the number of “Servings Per Container.” The serving size for dietary supplements that are pills, capsules, tablets, or packets is listed as a quantity (e.g., one capsule), whereas the serving size for dietary supplements that are bulk powders or liquids is listed as a volume (e.g., one teaspoon).

#### Group 2

##### Nutrients

List of nutrients in this particular product that are required or permitted on the Supplement Facts label. The actual amount in milligrams or micrograms in addition to the % Daily Value (%DV) are listed. Daily values are reference amounts of nutrients to consume or not to exceed and are used to calculate the %DV, based on a 2,000-calorie/day diet. Not all dietary supplement components have a DV.

#### Group 3

##### Other ingredients

List of additional ingredients in descending order by weight. These ingredients can include fillers, preservatives, sweeteners, flavorings, or colors.

## DID YOU KNOW?

### You Can “Overdo” It with Vitamins or Minerals

While vitamins and minerals are part of a healthy diet, it is possible to take too much of a “good thing.” If it is necessary for you to consume them because you can’t get enough through the foods you eat, it’s important to remember that “more” isn’t necessarily better.

*Calcium:* The body absorbs calcium from food better than from dietary supplements. Too much calcium can increase the risk of heart attack and stroke and cause muscle pain, constipation, abdominal pain and kidney stones. You can also help calcium do its job by getting your calcium from dairy products, avoiding excess salt, and not smoking.

*Vitamin D:* High levels of vitamin D in the blood can be dangerous. It triggers extra calcium absorption, which in turn can cause the same symptoms as too much calcium.

*Vitamin A:* The body stores excess vitamin A in fat and does not excrete it. The fact that vitamin A is found in many different supplements means it’s easy to get too much. Vitamin A toxicity is

caused by too much preformed vitamin A (retinol); signs include headache and skin rashes. Large amounts of beta-carotene and other provitamin A carotenoids are not associated with major adverse effects.

*Iron:* Iron is a nutrient that supports such functions as growth and development, immunity, and red blood cell formation. But taking high doses of iron supplements (especially on an empty stomach) can cause an upset stomach, constipation, nausea, abdominal pain, vomiting, and fainting. High doses of iron can also decrease zinc absorption; zinc promotes wound healing, immune function, and nervous system function.

Read more in the sources for this information:

- For Calcium, vitamin D and vitamin A: from the [Cleveland Clinic](#)
- For Iron: from an [NIH factsheet](#)

The **Tolerable Upper Intake Level (UL)** is the term used for the maximum daily intake unlikely to cause adverse health effects.

Always talk to a healthcare professional before starting a vitamin or mineral supplement.



## BACKGROUND INFORMATION

### What Are Live Microbials?

A live microbial is a single-celled prokaryotic (e.g., bacteria) or eukaryotic (e.g., yeast) microorganism that is intended to be viable or “active” when consumed. Many dietary supplements that are described as “probiotics” contain live microbial ingredients. “Probiotics” are not defined as a regulatory product category under the Federal Food, Drug, and Cosmetic Act (FD&C Act) or the Public Health Service Act (PHSA), and products that may be considered to be “probiotics” may be foods, drugs, and/or biologics under the FD&C Act and/or PHSA, depending on various factors, such as the intended use of the product. “Probiotics” have been defined in other contexts as live microorganisms that, when consumed in adequate amounts of food, provide the host with a health benefit. While there has been a lot of research on live microbials, it’s not clear which are helpful and which are not.

Live microbials are present in some fermented foods and available as dietary supplements. They act mainly in the gastrointestinal (GI) tract, where they can affect your gut microbiome. This microbiome is made up of many microorganisms (mostly bacteria) that live primarily in your large intestine. The goal of taking live microbials is that, when you eat or drink enough, they help protect your GI tract from harmful microorganisms, improve your digestion and gut function, and might provide other health benefits as well.

Commonly consumed live microbials include *Lactobacillus*, *Bifidobacterium*, *Saccharomyces*, *Streptococcus*, *Enterococcus*, *Escherichia*, and *Bacillus*. Microorganisms are named by their genus and species, and sometimes by their strain. An example is *Lactobacillus rhamnosus* GG. In this example, *Lactobacillus* is the genus, *rhamnosus* is the species, and GG is the strain.

### Which foods provide live microbials?

Fermented foods have added microbial cultures. Manufacturers make yogurt, for example, by adding live microorganisms (such as *Lactobacillus* or *Streptococcus*) to milk. But whether the microorganisms provide benefits is inconclusive.

Some fermented foods (such as sourdough bread and most pickles) are processed after fermentation, which kills the microorganisms. Microorganisms that are not alive do not provide the same benefits as living microorganisms and are not considered to be live microbials. Other fermented foods contain microorganisms that have not been studied to the same extent, so whether they have any benefits is not known. Examples of these include apple cider vinegar, cheese, kimchi, kombucha, miso, and sauerkraut.

Some unfermented foods have added microorganisms. These foods include some cereals, juices, milks, nutrition bars, and smoothies. Whether these microorganisms provide benefits is not clear.

### What kinds of live microbial dietary supplements are available?

Dietary supplements may contain a wide variety of microorganisms and amounts. The Supplement Facts label on a dietary supplement that contains live microbials lists the total weight of the microorganisms in the product. Many product labels also list the number of colony forming units (CFUs) in a serving. CFUs are a better indicator than total weight of the number of live microorganisms. Examples of CFUs that you might see on a label are  $1 \times 10^9$  (1 billion) CFUs and  $1 \times 10^{10}$  (10 billion) CFUs.

## Supplement Facts

Serving Size 1 capsule  
Servings Per Container 60

Ingredient	Amount Per Serving	% Daily Value**
Proprietary Blend of Cultures	180 mg	†
Lactobacillus acidophilus		
Bifidobacterium lactis		
Bifidobacterium longum		
Bifidobacterium bifidum		
Streptococcus thermophilus		

\*\*Percent Daily Value is based on a 2000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

† Daily value not established

Other Ingredients: Vegetable cellulose, vegetable magnesium stearate, silica.



### Dietary Supplement Safety

FDA oversees dietary supplements under a different set of regulations than those covering drug products and “conventional” foods. Under the Food, Drug & Cosmetics Act, manufacturers and distributors of dietary supplements are prohibited from marketing products in interstate commerce that are adulterated or misbranded. They are responsible for evaluating the safety and labeling of their products before marketing to ensure that they meet all the requirements of the FD&C Act and the FDA’s regulations. Unlike prescription drugs, dietary supplements are not approved by the government for safety and efficacy. FDA is authorized to take action against any adulterated or misbranded dietary supplement product after it reaches the market.

FDA monitors the compliance of dietary supplement products through a variety of surveillance activities and carefully reviews product complaints and adverse event reports. If FDA determines that a dietary supplement violates the law, the agency takes action, as appropriate. The public can access FDA’s resource lists, which are updated with ingredients that are not or do not appear to be lawfully included in products marketed as dietary supplements. Information about ingredients and products that have been the subject of FDA action or advisory statements is shown on these FDA webpages:

- Dietary Supplement Products & Ingredients (<https://www.fda.gov/food/dietary-supplements/dietary-supplement-products-ingredients>)
- Dietary Supplement Ingredient Advisory List of ingredients under current evaluation (<https://www.fda.gov/food/dietary-supplement-products-ingredients/dietary-supplement-ingredient-advisory-list>)
- Alerts, Advisories & Safety Information ([www.fda.gov/food/recalls-outbreaks-emergencies/alerts-advisories-safety-information](http://www.fda.gov/food/recalls-outbreaks-emergencies/alerts-advisories-safety-information))

### DID YOU KNOW?

#### Some Dietary Supplements Have Been Recalled



Some dietary supplements are recalled because of potential – or even proven – harmful effects. Reasons for product recalls include:

- microbiological, heavy metal, or other types of contamination
- absence of a dietary ingredient claimed to be in the product
- the presence of unlabeled allergens or ingredients found in drugs

### “Say What?” It’s All About Claims

It is not uncommon for people to mistakenly think that dietary supplements have been proven to have the same benefits as drugs. Legally, products labeled as dietary supplements that bear claims that the products are intended to treat, prevent, or cure diseases are drugs and subject to all requirements that pertain to drugs. An example would be a dietary supplement label that states, or claims, that the product “treats heart disease.” Claims like this render the product a drug and can generally *only* be made after FDA has reviewed and approved the drug.

Dietary supplements *are* permitted to make certain claims that describe how the product might affect either the *structure* or the *function* of the body. These are called structure/function claims, and they describe the role a specific nutrient plays in relation to the human body.

#### Examples of Structure/Function Claims

Structure and/or function claims can describe the *role* of an ingredient that is intended to affect the normal human body, or the *way* an ingredient acts to maintain such structure or function. For example:

- “Calcium builds strong bones.” (Structure)
- “Fiber maintains bowel regularity.” (Function)

These claims can be made if:

- They are truthful and non-misleading
- The manufacturer has proof that the claims are truthful
- The manufacturer notifies FDA of the text of the claim no later than 30 days after marketing the dietary supplement with the claim
- The label includes a disclaimer that says: “This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.”

FDA has an informative webpage, **Consumer Updates – Health Fraud** (<https://www.fda.gov/consumers/health-fraud-scams/consumer-updates-health-fraud>), that reviews all types of health claim fraud, including those for dietary supplements.



## BACKGROUND INFORMATION

**Claims Terminology: At a Glance**

Among the claims that are allowed for dietary supplements are health claims, nutrient content claims, structure/function claims, general well-being claims, and nutrient deficiency disease claims. For all such claims, the manufacturer must have substantiation that the claim is truthful and not misleading.

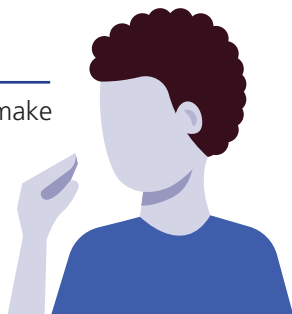
**Health claims:** Health claims are claims that express or imply the role a food or particular ingredient may have in *reducing the risk of a disease or a health-related condition*. FDA has the authority to review health claims before the product about which the claim is made is marketed.

**Nutrient content claims:** These are claims that describe the *level* of a nutrient in a food or dietary supplement. For example, this could be terms such as *free, high, and low*, or could compare the level of a nutrient in a food to that of another food, using terms such as *more, reduced, and lite*. For example, a product could use the claim “high in antioxidant vitamin C” if it contains 20 percent or more of the daily value for vitamin C.

**Structure/function claims:** These are claims that describe the role of a dietary ingredient intended to affect the normal structure or function of the human body. Structure/function claims may not link the claimed effect of the dietary ingredient to a disease or state of health leading to a disease.

- **General well-being claims:** These are claims that describe general well-being derived from consuming a dietary ingredient.
- **Nutrient deficiency disease claims:** These are claims that describe a benefit related to a nutrient deficiency disease (like vitamin C and scurvy). But interestingly, these are allowed only if they also say how widespread the disease is in the United States.

Silver Poisoning can make a person turn blue!

**Think Before You Decide**

The potential impact that a dietary supplement can have on overall health, and the fact that dietary supplements are released into the marketplace without FDA approval, underscores the need to **thoroughly research** any dietary supplement you might consider taking.

FDA and the National Institutes of Health offer these tips for consideration:

- 1. Consider your overall diet.** Remember: dietary supplements are intended to *supplement* the diet when needed, but not to *replace* a healthy and balanced diet. While you need enough nutrients, too much of some nutrients can cause problems.
- 2. Talk to your healthcare provider** before deciding to purchase or use a dietary supplement. Be mindful that some supplements may interact with medicines or other supplements. Also, do not use dietary supplements in place of prescription medications. Many supplements contain active ingredients that have strong biological effects; if you have certain health conditions, using them could place your health at risk.
- 3. Be aware that some dietary ingredients can be toxic in certain circumstances.** Some ingredients and products can be harmful when consumed in high amounts, when taken for a long time, or when used in combination with certain other drugs, dietary supplements, or foods.
- 4. Investigate potential dietary supplement(s) + drug interactions** including prescription and over-the-counter (OTC) medicines. For example, certain supplements can be problematic when used with blood thinners or can lessen the effectiveness of prescription medicine. So, be sure to check out potential interactions of any dietary supplement with the prescription or OTC drugs *you* are taking.

**DID YOU KNOW?****Combining Dietary Supplements with Drugs Can Cause Problems**

- Vitamin E and ginkgo biloba are dietary supplements that can thin the blood. If they are combined with Coumadin (a prescription medicine) or aspirin (OTC drug), they can increase the potential for internal bleeding.
- St. John's Wort may reduce the effectiveness of prescription drugs for heart disease, depression, seizures, HIV, certain cancers, or oral contraceptives.

# BACKGROUND INFORMATION



**5. Know the health implications in certain situations,** like before a surgical procedure or platelet donation.

- **If you are planning elective surgery:** Be aware that some dietary supplements can interact in a harmful way with medications you need to take before, after, or during surgery. Your healthcare professional may ask you to stop taking dietary supplements 2-3 weeks before the procedure to avoid potentially dangerous changes in heart rate, blood pressure, or bleeding risk.
- **If you plan to donate platelets:** You must not take a blood-thinning supplement, such as vitamin E, (or aspirin) for at least 48 hours preceding platelet donation.

**6. Most important of all, be “skeptical”!** Be aware that if claims on the label (or in the marketing materials/website) of a dietary supplement *sound* too good to be true—they probably are. Safety is the most important thing—so always do your research and be sure to consult your healthcare provider before deciding to purchase or use any dietary supplement.

**DID YOU KNOW?** Dietary supplement advertising, including ads broadcast on radio and television, falls under the jurisdiction of the Federal Trade Commission (FTC). FDA and FTC work together to regulate dietary supplement marketing.

### “Natural”?

Do not assume that the term “natural” ensures wholesomeness, or that these food-like substances necessarily have milder effects, than drugs. The term “natural” on labels is not well defined and is sometimes used ambiguously to imply unsubstantiated benefits or safety. For example, many weight-loss products claim to be “natural” or “herbal,” but this doesn’t necessarily make them safe. Their ingredients may interact with drugs or may be dangerous for people with certain medical conditions.

**Common Sense Tip:** If it sounds too good to be true, it probably is! FDA says that consumers should be suspicious of product claims such as “works better than [a prescription drug],” “totally safe,” or has “no side effects.”

### Research Matters!

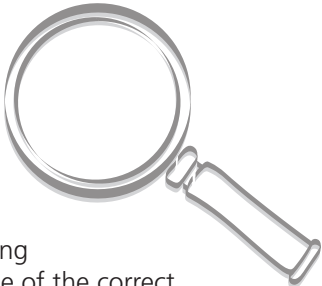
When considering whether to take a dietary supplement, it’s absolutely critical to do your research. FDA recommends using noncommercial sites instead of depending on information from sellers, which *could* contain “marketing spin” versus scientific fact.

Credible sites could include:

- FDA Dietary Supplements: <https://www.fda.gov/food/dietary-supplements>
- NIH Office of Dietary Supplements: [https://ods.od.nih.gov/HealthInformation/DS\\_WhatYouNeedToKnow.aspx/](https://ods.od.nih.gov/HealthInformation/DS_WhatYouNeedToKnow.aspx/)
- NIH Dietary Supplement Label Database: <https://dslid.od.nih.gov/dslid/>
- USDA National Agricultural Library - Dietary Supplements: <https://www.nal.usda.gov/topics/dietary-supplements>
- USDA’s Dietary Supplement Ingredient Database: <https://dietarysupplementdatabase.usda.nih.gov/>

### Quality

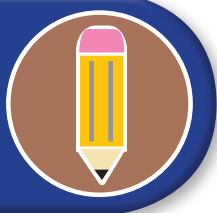
FDA has established good manufacturing practices (GMPs) that companies must follow to help ensure the identity, purity, strength, and composition of their dietary supplements. These GMPs can prevent adding the wrong ingredient (or too much or too little of the correct ingredient) and reduce the chance of contamination or improper packaging and labeling of a product. FDA also periodically inspects facilities that manufacture supplements.



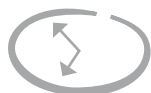
Several independent organizations offer quality testing and allow products that pass these tests to display a seal of quality assurance that indicates the product was properly manufactured, contains the ingredients listed on the label, and does not contain harmful levels of contaminants. These seals do not guarantee that a product is safe or effective. Organizations\* that offer quality testing include:

- ConsumerLab.com
- NSF International
- U.S. Pharmacopeia (USP)

\* Listing a specific company, organization, or service does not represent an endorsement by FDA.



# ACTIVITY 1: PRODUCT CATEGORIES



**TIME** One 45-Minute Class Period



## ACTIVITY AT A GLANCE

In this activity, students will learn to identify products that are dietary supplements, as opposed to foods, drugs, or cosmetics.



### TIME TO TUNE IN

*Dietary Supplements: What You Need to Know* (1:43)

<https://www.youtube.com/watch?v=-tY1Ln9JfVs>

*Drugs vs. Supplements* (1:19)

<https://www.webmd.com/vitamins-and-supplements/video/drugs-vs-supplements>

*The Real Story of Snake Oil* (1:44)

<https://www.youtube.com/watch?v=LaDsOJATX3A>

## GETTING STARTED

### MATERIALS

- **Product Category** cards
- **Product Category** worksheet

### ADVANCE PREPARATION

- Students can work individually or in groups.
- Make a **Product Category** card set for each student or group.
- Make a copy of the **Product Category** worksheet for each student or group.
- Confirm student access to the online student worksheet if teaching in an online setting.

## INTRODUCTION

Explain that dietary supplements are meant to *supplement* the diet and must be *ingested* (taken orally). Discuss a few examples, such as multivitamins.

Ask why people might take dietary supplements, e.g., for possible health benefits or for a desired benefit to their

appearance. Point out that cosmetics are often used to enhance appearance, but they are not ingested.

Explain that dietary supplements are not approved for safety prior to sales to consumers, but that a reporting system exists for people to report adverse reactions to specific dietary supplements.

# PRODUCT CATEGORIES



## STUDENT PROCEDURE

1. Work alone or in pairs.
2. Examine each **Product Card** and decide which category each one belongs to: food, drug, cosmetic, or dietary supplement.
3. Complete the **Product Category** student worksheet.
4. Watch these three videos that provide an overview about what dietary supplements are and also explain how to understand the Supplement Label.

*Dietary Supplements: What You Need to Know* (1:43)  
<https://www.youtube.com/watch?v=-tY1Ln9JfVs>

*Drugs vs. Supplements* (1:19)

<https://www.webmd.com/vitamins-and-supplements/video/drugs-vs-supplements>

*The Real Story of Snake Oil* (1:44)

<https://www.youtube.com/watch?v=LaDsOJATX3A>

5. Read FDA's Fact Sheet: Cosmetics Facts  
<https://www.fda.gov/media/93074/download>
6. Review the answers on your worksheet. Based on the information learned from the videos and the Cosmetics Fact Sheet, check if your initial choices are correct, and if necessary, move items into their correct categories.
7. As a class, discuss the differences among the product categories.

## REVIEW

### **What are some examples of dietary supplements?**

Dietary supplements can be vitamins, minerals, live microbials (commonly referred to as "probiotics"), herbs, botanicals, extracts, fish oil, amino acids, or enzymes.

### **How do dietary supplements differ from drugs? From foods? From cosmetics?**

Dietary supplements are taken **in addition to** food, to supplement the diet, and they must be taken orally (not applied topically). In contrast, drugs are intended to, among other things, treat or prevent disease.

## EXTENSIONS

Students could do one or more of the following activities:

1. Design a poster (for display in class or online) to inform other high school students about different categories of dietary supplements.
2. Create a game for middle school students that will teach them how to recognize what a dietary supplement is.
3. Design a similar card activity using a different set of items with properties similar to those in the original set.

## SUMMARY

Dietary supplements should not replace eating healthy food. You should always talk with your healthcare provider before you consider taking a dietary supplement.

## UP NEXT ▶▶▶

Now that you can identify a dietary supplement, let's take a closer look at the label that informs people about what is in dietary supplements.

## RESOURCES

*U.S. Pharmacopeia*

<https://qualitymatters.usp.org/index.php/topics/dietary-supplements>

*Dietary Supplement Practicum (5 of 21): Drugs vs. Foods vs. Dietary Supplements*

<https://www.youtube.com/watch?v=3EtmTEHZi0Y>

*Dietary Supplements: A Framework for Evaluating Safety*

<https://www.ncbi.nlm.nih.gov/books/NBK216048>

# STUDENT WORKSHEET

## ACTIVITY 1: PRODUCT CATEGORIES

Name \_\_\_\_\_ Date \_\_\_\_\_ Class/Hour \_\_\_\_\_

Consider each product below and complete the chart. Some products could be in more than one category.

Product	Food, Drug, Cosmetic, Dietary Supplement, or multiple possible categories?	What evidence did you use to decide on this category?	Safety evaluated before or after sales?
 Orange-flavored lip balm			
 Daily multivitamin			
 Whitening toothpaste that helps prevent cavities			
 Biotin pills (100 micrograms each)			
 Energy Drink			
 Whey protein powder			
 Coconut-scented shampoo			
 Vitamin E oil			
 Sleep aid liquid			
 Caffeine lozenges			
 Yogurt			
 Weight loss pill			



**WEIGHT LOSS PILL**



**VITAMIN E OIL**



**TOOTH PASTE**



**SLEEP AID**



**PROTEIN POWDER**



**LIP BALM**



**MULTIVITAMIN**



**ENERGY DRINK**



**SHAMPOO**



**CAFFEINE LOZENGES**

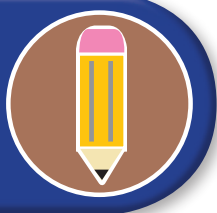


**YOGURT**

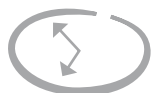


**BIOTIN**





# ACTIVITY 2: SUPPLEMENTS VS. FOOD



**TIME** One 45-Minute Class Period



## ACTIVITY AT A GLANCE

Students will examine a Supplement Facts label for a product containing a multivitamin, or fish oil. They will choose one component shown on the label, and identify food sources to achieve the same daily intake amount.



## TIME TO TUNE IN

*Understand Changes to Dietary Supplement Labels* (2:02)  
<https://www.youtube.com/watch?v=kLploVqHjBA>

*Understanding Pre and Probiotics* (3:14)  
<https://www.youtube.com/watch?v=U1p4YMU3vWk>

*Vitamins and Minerals – Nutrition Fundamentals* (6:58)  
<https://www.youtube.com/watch?v=qgNURQFWNWM>

## GETTING STARTED

### MATERIALS

- Sample **Supplement Facts** label
- **Supplement Facts Label** student worksheet
- Credible Source Guide

### ADVANCE PREPARATION

- Students can work individually or in groups.
- Make a copy of the **Supplement Facts Label** student worksheet for each student.
- Confirm internet access for online teaching.

## INTRODUCTION

A balanced diet typically offers all the nutrients people need. If you are considering taking a dietary supplement, how do you think your overall nutrient intake might differ if you

consumed the same nutrients through the foods you eat and the beverages you drink?



## STUDENT PROCEDURE

1. Watch these three videos:  
*Understand Changes to Dietary Supplement Labels* (2:02)  
<https://www.youtube.com/watch?v=kLploVqHjBA>  
*Understanding Pre and Probiotics* (3:14)  
<https://www.youtube.com/watch?v=U1p4YMU3vWk>  
*Vitamins and Minerals – Nutrition Fundamentals* (6:58)  
<https://www.youtube.com/watch?v=qgNURQFWNWM>
2. Review the instructions on the Supplement Facts Label worksheet and choose a Supplement Facts label to examine. You can use the one provided or choose a different one from the references on the worksheet, from a supplement bottle from home, or from the NIH Dietary Supplement Label Database: <https://dslid.od.nih.gov>
3. If you choose a different label, make a copy/photo of the label to add to the worksheet.
4. Complete the **Supplement Facts Label** student worksheet.
  - Select one component in the dietary supplement to study further.
  - List the dietary supplement component category (e.g., vitamins, minerals).
  - How much of that component is in one dose/serving of the supplement?
  - Is this component water soluble?
  - Identify foods and/or beverages that could be consumed to match the same quantity of your chosen dietary supplement component. Using the Nutrition Facts label (or online nutrition data) to list each food and/or beverage and the amount of this component per serving.
  - What are some of the other nutrients (e.g., dietary fiber) provided by consuming the food choices that are not in the dietary supplement?
5. When you have completed your worksheet, discuss your answers with the whole class.

## REVIEW

### **What is included on a Supplement Facts label?**

This label includes the serving size, servings per container, the amount per serving for many components, and the % Daily Value for some components. The label also lists Other Ingredients such as fillers and preservatives in the supplement.

### **Why is a Daily Value shown for some dietary supplement components and not shown for others?**

Not all nutrients or dietary supplement components have an established Daily Value. For example, omega-3 fatty acids found in fish oil supplements do not have a Daily Value.

## EXTENSIONS

Students could do one or more of the following activities:

1. Make a poster showing how to read parts of a Supplement Facts label.
2. Identify five nutrients to get more of and create a daily menu that fulfills this goal.

## SUMMARY

The same nutrients that are in dietary supplements are also available in foods and beverages. Foods and beverages also usually provide additional nutrients and health benefits not found in dietary supplements.

## RESOURCES

*How to Read a Supplement Label*

<https://qualitymatters.usp.org/how-read-supplement-label>

*Osmosis.org: Prebiotics & Probiotics*

<https://www.youtube.com/watch?v=0z47wLZ4-O4>

*Probiotic Product Labels*

<https://isappscience.org/for-consumers/probiotic-product-labels/>

*How to Evaluate Health Information on the Internet: Questions and Answers*

[https://ods.od.nih.gov/HealthInformation/How\\_To\\_Evaluate\\_Health\\_Information\\_on\\_the\\_Internet\\_Questions\\_and\\_Answers.aspx](https://ods.od.nih.gov/HealthInformation/How_To_Evaluate_Health_Information_on_the_Internet_Questions_and_Answers.aspx)

## UP NEXT ▶▶▶

Now that you are more familiar with Supplement Facts labels, let's take a closer look at some more dietary supplements issues that might be helpful to know about.

# STUDENT WORKSHEET

## ACTIVITY 2: SUPPLEMENT FACTS LABEL

Name \_\_\_\_\_ Date \_\_\_\_\_ Class/Hour \_\_\_\_\_

Use the Supplement Facts label to the right or choose another one that includes multivitamins, live microbials (commonly referred to as “probiotics”), or fish oil. You could use a label from a dietary supplement found in your home, find one online, or choose one from the NIH Dietary Supplement Label Database: <https://dslid.od.nih.gov>.

<b>Supplement Facts</b>		
Serving Size 1 Gelcap Servings Per Container 100		
	<b>Amount Per Serving</b>	<b>% Daily Value</b>
Vitamin A (as retinyl acetate and 50% as beta-carotene)	900 mcg	100%
Vitamin C (as ascorbic acid)	90 mg	100%
Vitamin D (as cholecalciferol)	20 mcg (800 IU)	100%
Vitamin E (as d-alpha tocopheryl acetate)	15 mg	100%
Thiamin (as thiamin mononitrate)	1.2 mg	100%
Riboflavin	1.3 mg	100%
Niacin (as niacinamide)	16 mg	100%
Vitamin B <sub>6</sub> (as pyridoxine hydrochloride)	1.7 mg	100%
Folate	400 mcg DFE (240 mcg folic acid)	100%
Vitamin B <sub>12</sub> (as cyanocobalamin)	2.4 mcg	100%
Biotin	3 mcg	100%
Pantothenic Acid (as calcium pantothenate)	5 mg	100%

Other ingredients: Gelatin, lactose, magnesium stearate, microcrystalline cellulose, FD&C Yellow No. 6, propylene glycol, preservatives (propylparaben and sodium benzoate).

Choose one of the key components, such as a specific vitamin or mineral listed on the label of your chosen supplement, to research and answer the following questions about that component:

1. Identify your chosen supplement \_\_\_\_\_
2. Which component of that supplement will you research?  
\_\_\_\_\_
3. How much of that component is in one dose/serving?  
\_\_\_\_\_
4. Is this component water soluble? \_\_\_\_\_
5. Complete the first line of the chart below with information about your component.
6. Research your chosen component to learn about foods/beverages that contain that component; list at least 3 different foods/beverages that contain your chosen component on the chart below.

Use the Nutrition Facts label (or online nutrition data, such as this database <https://fdc.nal.usda.gov/index.html>) to research each food and/or beverage to complete the chart below. Your completed chart will help you identify food sources that could provide you with the same daily intake amount.

<b>Dietary supplement versus food/beverage consumption</b>			
<b>Dietary Supplement Component</b>	<b>Amount per serving</b>	<b>Number of servings/day</b>	<b>Daily total amount consumed</b>
<b>Food or beverage</b>	<b>Nutrient amount per serving</b>	<b>Number of servings consumed</b>	<b>Total amount consumed</b>
Could you get enough of this component in foods you would eat?			

Choose one of the foods or beverages in column 1, and list some of the other nutrients (e.g., protein) that are found in that food that are **not** in the dietary supplement?

\_\_\_\_\_

\_\_\_\_\_

# STUDENT WORKSHEET ANSWERS

## ACTIVITY 1: PRODUCT CATEGORIES

Name \_\_\_\_\_ Date \_\_\_\_\_ Class/Hour \_\_\_\_\_

Consider each product below and complete the chart. Some products could be in more than one category.

Product	Food, Drug, Cosmetic, Dietary Supplement, or multiple possible categories?	What evidence did you use to decide on this category?	Safety evaluated before or after sales?
 Orange-flavored lip balm	Cosmetic	Enhances appearance, applied topically	After sales
 Daily multivitamin	Dietary Supplement	Ingested; has dietary ingredients	After sales
 Whitening toothpaste that helps prevent cavities	Cosmetic OTC drug	Enhances appearance, claims to "prevent cavities"	After sales Before sales
 Biotin pills (100 micrograms each)	Dietary Supplement	Ingested; has dietary ingredients	After sales
 Energy Drink	Food (beverage) or Dietary Supplement	Ingested; has dietary ingredients	After sales
 Whey protein powder	Food or Dietary Supplement	Ingested; has dietary ingredients	After sales
 Coconut-scented shampoo	Cosmetic	Enhances appearance, applied topically	After sales
 Vitamin E oil	Cosmetic or Dietary Supplement	Enhances appearance; placed on skin Ingested; some products may be taken orally (has dietary ingredients)	After sales
 Sleep aid liquid	Over the Counter (OTC) drug	Ingested	Before sales
 Caffeine lozenges	Food or Dietary supplement or OTC Drug	Ingested; has dietary ingredients Cough lozenges are OTC drugs, and some can contain caffeine.	After sales Before sales (OTC drugs)
 Yogurt	Food	Ingested	After sales
 Weight loss pill	Drug or Dietary Supplement	Ingested; has dietary ingredients Some drug products require a prescription	Before sales (drugs) After sales

# STUDENT WORKSHEET ANSWERS

## ACTIVITY 2: SUPPLEMENT FACTS LABEL

Name \_\_\_\_\_ Date \_\_\_\_\_ Class/Hour \_\_\_\_\_

Use the Supplement Facts label to the right or choose another one that includes multivitamins, live microbials (commonly referred to as “probiotics”), or fish oil. You could use a label from a dietary supplement found in your home, find one online, or choose one from the NIH Dietary Supplement Label Database: <https://dslod.nih.gov>.

Supplement Facts		
Serving Size 1 Gelcap Servings Per Container 100		
	Amount Per Serving	% Daily Value
Vitamin A (as retinyl acetate and 50% as beta-carotene)	900 mcg	100%
Vitamin C (as ascorbic acid)	90 mg	100%
Vitamin D (as cholecalciferol)	20 mcg (800 IU)	100%
Vitamin E (as dl-alpha tocopheryl acetate)	15 mg	100%
Thiamin (as thiamin mononitrate)	1.2 mg	100%
Riboflavin	1.3 mg	100%
Niacin (as niacinamide)	16 mg	100%
Vitamin B <sub>6</sub> (as pyridoxine hydrochloride)	1.7 mg	100%
Folate	400 mcg DFE (240 mcg folic acid)	100%
Vitamin B <sub>12</sub> (as cyanocobalamin)	2.4 mcg	100%
Biotin	3 mcg	100%
Pantothenic Acid (as calcium pantothenate)	5 mg	100%

Other ingredients: Gelatin, lactose, magnesium stearate, microcrystalline cellulose, FD&C Yellow No. 6, propylene glycol, preservatives (propylparaben and sodium benzoate).

Choose one of the key components, such as a specific vitamin or mineral listed on the label of your chosen supplement, to research and answer the following questions about that component:

- Identify your chosen supplement Multivitamin - 1 Gelcap
- Which component of that supplement will you research?  
Vitamin D
- How much of that component is in one dose/serving?  
20 mcg
- Is this component water soluble? No
- Complete the first line of the chart below with information about your component.
- Research your chosen component to learn about foods/beverages that contain that component; list at least 3 different foods/beverages that contain your chosen component on the chart below.

Use the Nutrition Facts label (or online nutrition data, such as this database <https://fdc.nal.usda.gov/index.html>) to research each food and/or beverage to complete the chart below. Your completed chart will help you identify food sources that could provide you with the same daily intake amount.

Dietary supplement versus food/beverage consumption			
Dietary Supplement Component	Amount per serving	Number of servings/day	Daily total amount consumed
Vitamin D	20 mcg	1	20 mcg
Food or beverage	Nutrient amount per serving	Number of servings consumed	Total amount consumed
Milk - 1 cup	2.5 mcg	2	5 mcg
Wild caught salmon (3.5 ounce filet)	24.7 mcg	1	24.7 mcg
Canned light tuna - 3.5 oz.	6.7 mcg	1	6.7 mcg
Could you get enough of this component in foods you would eat?			

Choose one of the foods or beverages in column 1, and list some of the other nutrients (e.g., protein) that are found in that food that are **not** in the dietary supplement?

Milk also contains calcium, protein, phosphorus, and fat.

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Examining Dietary Supplements  
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**Center for Food Safety and Applied Nutrition  
College Park, MD**

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**FDA**

**Center for Food Safety and Applied Nutrition**  
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*Office of Dietary Supplement Programs*  
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**Office of Dietary Supplements**

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