

## SUPPLEMENTS

# RISKS, REALITIES AND REPORTING

The "Risks, Realities and Reporting" module provides students with a critical look at the potential dangers associated with dietary supplements, including the risk of contamination, misleading claims, and adverse effects. This module emphasizes the importance of understanding these risks and knowing how to report any adverse reactions or concerns. A key highlight of this module is its focus on real-world examples of tainted supplements, helping students grasp the serious consequences of using unregulated or poorly tested products. Developed by educators and FDA experts, this module connects directly to LifeSmarts topics such as health, consumer safety, and ethics. With engaging videos, case studies, and practical advice, teachers will find this module essential for educating students about the realities of the supplement industry and preparing them for LifeSmarts competitions.



## DISCUSSION QUESTIONS

- Why is it important to critically evaluate the labels and marketing claims of dietary supplements? Discuss the potential risks of relying solely on the information provided by manufacturers.
- Discuss the role of the FDA in regulating dietary supplements. Why are dietary supplements not held to the same standards as prescription drugs, and what are the implications for consumer safety?

## CHALLENGE QUESTION

- Research a case where a dietary supplement was found to be harmful after it had been widely marketed and used by consumers. What actions were taken by regulatory bodies, and what were the outcomes?



**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

- Adverse Event
- FDA Recall
- Tainted Supplements
- Steroids
- Misbranded
- DSHEA (Dietary Supplement Health and Education Act)
- Anabolic Steroids
- Bodybuilding Supplements
- Controlled Substances
- Stimulants

## ACTIVITIES

- Banned from Sports
- Dietary Supplements and Advertising

## VIDEOS

\* See reverse side for list



## VIDEO LINKS

Teenagers using dietary supplements (1:00)  
<https://www.youtube.com/watch?v=hWbx-tSXOuI>

The Simple Truth: Decoding the Dietary Supplement Industry (3:00)  
<https://www.youtube.com/watch?v=7HIVIM-35w>

Athlete Voices - Abby Raymond (3:31)  
<https://www.youtube.com/watch?v=d9tVERZHsBY>

## OTHER WEB LINKS

Botanical Dietary Supplements - Background Information  
<https://ods.od.nih.gov/factsheets/BotanicalBackground-Consumer>

Herbs At A Glance  
<https://www.nccih.nih.gov/health/herbsataglance>

Toxicity of Herbs, Vitamins, and Supplements  
<https://pubmed.ncbi.nlm.nih.gov/32147004/>

Toxic Herbals and Plants in the United States  
<https://www.sciencedirect.com/science/article/pii/B9780128158463000193>

5 Risky Herbal Supplements  
<https://www.webmd.com/vitamins-and-supplements/features/risky-herbal-supplements>

12 Dangerous Supplements  
<https://www.cbsnews.com/pictures/12-dangerous-supplements/>

Natural Doesn't Necessarily Mean Safer, or Better  
<https://www.nccih.nih.gov/health/know-science/natural-doesnt-mean-better>

15 Supplement Ingredients to Always Avoid  
<https://www.consumerreports.org/vitamins-supplements/15-supplement-ingredients-to-always-avoid/>

CVS Launches Dietary Supplement Testing Program  
<https://cen.acs.org/safety/consumer-safety/CVS-launches-dietary-supplement-testing/97/web/2019/06>

## DISCUSSION QUESTIONS (SAMPLE ANSWERS)

- A: It is important to critically evaluate the labels and marketing claims of dietary supplements because these claims are often designed to sell products rather than provide accurate health information. Manufacturers may exaggerate the benefits of their products or omit potential risks, leading consumers to believe that a supplement is safer or more effective than it actually is. For example, some supplements may claim to enhance muscle growth or aid in weight loss without disclosing that they contain harmful or untested ingredients. Relying solely on the information provided by manufacturers can lead to serious health risks, including adverse reactions, interactions with other medications, or long-term health problems. Consumers should seek information from credible sources, such as government health sites or medical professionals, to ensure they make informed decisions about supplement use.
- A: The FDA plays a crucial role in regulating dietary supplements, but its authority is more limited compared to its oversight of prescription drugs. Dietary supplements are not required to undergo pre-market approval by the FDA, meaning they do not need to be proven safe or effective before they are sold to the public. This is because dietary supplements are classified as food products rather than drugs. The implications for consumer safety are significant: since supplements are not rigorously tested, there is a greater risk that they may contain harmful ingredients, incorrect dosages, or contaminants. The FDA can take action to remove unsafe supplements from the market, but this typically occurs only after adverse events are reported. This reactive approach means that consumers must be vigilant and do their research before using dietary supplements.

## CHALLENGE QUESTION (SAMPLE ANSWER)

- **An example is the case of DMAA (1,3-dimethylamylamine), a stimulant once widely used in pre-workout and weight loss supplements.**  
<https://www.fda.gov/food/information-select-dietary-supplement-ingredients-and-other-substances/dmaa-products-marketed-dietary-supplements>

### Key Points:

**Harmful Effects:** DMAA was linked to numerous cases of high blood pressure, heart attacks, strokes, and even deaths. Despite being marketed as a natural stimulant, DMAA was found to pose significant cardiovascular risks.

**Regulatory Actions:** In 2013, the FDA issued warnings to consumers about the dangers of DMAA and took steps to remove it from the market. The agency also issued warning letters to manufacturers and seized products containing DMAA.

**Outcomes:** The FDA's actions led to a significant decrease in the availability of DMAA-containing supplements, though some products continued to appear on the market for several years afterward. The case highlighted the challenges of regulating dietary supplements and the importance of ongoing vigilance by both consumers and regulatory agencies to ensure public safety.



# SCIENCE AND OUR FOOD SUPPLY

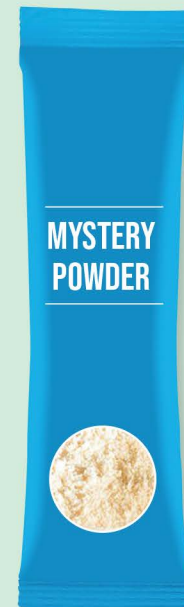
## Supplements - Risks, Realities and Reporting



### 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 (2:26)  
[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 teens need to know about (2:12)  
<https://www.youtube.com/watch?v=EDH1u0uGM>

HIGH SCHOOL

**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.

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. Supplement #11 <https://www.usad.org/athleteslist>

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. Supplement #11 <https://www.usad.org/athleteslist>

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?

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>
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 use on your stop(s) sketch PSA format 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&feature=emb\\_logo](https://www.youtube.com/watch?v=9Q8b11uE8k4&feature=emb_logo)

HIGH SCHOOL

**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 addictive, even like withdrawal. 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 61.
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** ▶▶▶

Think that you know 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  
<https://www.eatingwell.com/story/10-common-energy-drink-ingredients-what-you-need-to-know>
- Caffeine? Not So Fast!  
<https://www.healthline.com/health/caffeine#side-effects>
- Caffeine: Facts, Usage, and Side Effects  
<https://www.healthline.com/health/caffeine#side-effects>
- Dangers of Making Sports And So Much Caffeine  
<https://www.healthline.com/health/caffeine#side-effects>
- Dietary Supplements for Energy and Endurance: Fact Sheet for Consumers  
<https://www.fda.gov/oc/ohrt/dietary-supplements-for-energy-and-endurance-fact-sheet-for-consumers>
- Dietary Supplements for Energy and Endurance: Performance and Safety for Health Professionals  
<https://www.fda.gov/oc/ohrt/dietary-supplements-for-energy-and-endurance-performance-and-safety-for-health-professionals>
- Energy Beverages: Content and Safety  
<https://www.fda.gov/oc/ohrt/dietary-supplements-for-energy-and-endurance-performance-and-safety-for-health-professionals>
- Energy Drink Ingredients and What They Do  
<https://www.healthline.com/health/energy-drink-ingredients>
- Energy Drinks  
<https://www.healthline.com/health/energy-drinks>
- Sports Drinks and Energy Drinks for Children and Adolescents: Are They Appropriate?  
<https://pediatrics.aappublications.org/content/127/1/182>
- Getting the Answer: How Much Caffeine is Too Much?  
<https://www.fda.gov/consumers/consumer-updates/pilling-beans-how-much-caffeine-too-much>
- Energy Drink Labels: Consumer Alerting  
<https://www.fda.gov/oc/ohrt/dietary-supplements-for-energy-and-endurance-performance-and-safety-for-health-professionals>

HIGH SCHOOL

# DIETARY SUPPLEMENTS: RISKS, REALITIES, AND REPORTING

## Healthy Skepticism about Work-Out and Weight Loss Dietary Supplements, Awareness of Misleading Product Labeling, and Paying Attention to Adverse Reactions

The content in this module recommends that teachers will have already taught students the following underlying key concepts: homeostasis, human body systems and their interconnectedness, and critical skills to evaluate marketing labels.

### BACKGROUND INFORMATION



**“Too Good to be True?”** shows teens that dietary supplements marketed as bodybuilding (or muscle-building) and weight loss products can contain unsafe or undeclared ingredients in uncertain quantities. It also guides them to talk with their healthcare providers and report adverse reactions they experience with these products.

### ACTIVITY 1



**Banned from Sports** helps students understand that the United States Anti-Doping Agency (USADA) prohibits competing athletes from using certain ingredients that may be in dietary supplements.



**Time to Tune In**

*Athlete Voices - Abby Raymond* (3:31)

<https://www.youtube.com/watch?v=d9tVERZHsBY>

### ACTIVITY 2



**Dietary Supplements and Advertising** teaches teens to critically evaluate some of the deceptive and misleading advertising used to promote many dietary supplements to them.



**Time to Tune In**

*Teenagers using dietary supplements* (1:00)

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

*The Simple Truth: Decoding the Dietary Supplement Industry* (3:00)

<https://www.youtube.com/watch?v=7HlVlIM-35w>

*Supplements 411 – Dietary Supplement Bottle – U.S. Anti-Doping Agency* (7:24)

[https://www.youtube.com/](https://www.youtube.com/watch?v=50QBwi11ncE&feature=emb_logo)

[watch?v=50QBwi11ncE&feature=emb\\_logo](https://www.youtube.com/watch?v=50QBwi11ncE&feature=emb_logo)



## BACKGROUND INFORMATION

### “Too Good to be True?”

#### When Dietary Supplements Pose Potential Health Risks

As you learned in Module 1, dietary supplements can serve as a *secondary source* of nutrients. They can help you meet the daily requirements of certain nutrients that your body needs, but remember that a healthy and balanced diet should always be the *primary source* of those vitamins and minerals that your body needs to function.

Although some dietary supplements can be beneficial to health, taking certain supplements can also involve health risks. The U.S. Centers for Disease Control and Prevention (CDC) has estimated that 23,000 emergency room visits each year are attributed to dietary supplement use. ([New England Journal of Medicine](#)) Examples of types of potentially risky dietary supplements are **muscle-building/bodybuilding** products and **weight loss** products.

#### Previous Points to Remember

- Dietary supplements are *not* subject to the same requirements as drugs; FDA does not have the authority to approve dietary supplements or their labeling.
- Dietary supplements should *never* be used in place of prescription medications.

#### What’s on the Label? – Common Ingredients in Muscle-Building or Weight Loss Products

Dietary supplements marketed as **muscle-building or exercise-enhancing** can contain a variety of ingredients. These might include:

- Vitamins and minerals
- Protein
- Amino acids
- Herbs
- Caffeine

Dietary supplements marketed for **weight loss** can contain ingredients that are different from those found in bodybuilding products. In fact, many supplements can contain dozens of ingredients—even as many as 90 ingredients or more. Common ingredients in these supplements include:

- Botanicals (herbs and other plant components)
- Dietary fiber
- Caffeine
- Minerals

Depending on the product, the ingredients will be listed in different amounts and combinations. If you are considering a specific supplement, be sure to check the Supplement Facts label and ingredient list.

The National Institutes of Health (NIH) provides lists of common ingredients found in bodybuilding and weight loss products, along with detailed information about each ingredient. These are great resources to use as you examine the label of any dietary supplement you might be considering. It’s important to do your research.

NIH Dietary Supplements for Exercise and Athletic Performance (<https://ods.od.nih.gov/factsheets/ExerciseAndAthleticPerformance-Consumer/>)

NIH Dietary Supplements for Weight Loss (<https://ods.od.nih.gov/factsheets/WeightLoss-HealthProfessional/>)

#### Sample Performance Supplement Label

Supplement Facts		
Serving Size 2 capsules		
Servings Per Container 60		
Ingredient	Amount Per Serving	% Daily Value
Creatine Monohydrate	1500 mg	*
*Daily value not established		

Other Ingredients: Gelatin, magnesium stearate, silicon dioxide.

# BACKGROUND INFORMATION



**DID YOU KNOW?**

Companies that make supplements are responsible for ensuring the quality and safety of their products. But this doesn't always happen—and some products marketed as supplements may contain drug ingredients or ingredients not listed on the label. Sometimes, the amount of an ingredient listed on the label is not how much is actually in the product.

### Be Aware of Hidden (and Dangerous) Ingredients

You could unknowingly take products that are marketed as dietary supplements but that actually include prescription drug ingredients, controlled substances, or untested and unstudied pharmaceutically active ingredients. These deceptive products can harm you!

Hidden ingredients in bodybuilding and weight loss products are a difficult challenge. FDA actively works to identify and remove from the market over-the-counter products, frequently represented as dietary supplements, that contain **undeclared ingredients** that could be harmful.

Updated public notifications about specific bodybuilding and weight loss products that have been found to be tainted are posted on FDA's website. These are important sources for anyone considering either of these types of supplements.

### Tainted Bodybuilding Products and Ingredients

### Tainted Weight Loss Products and Ingredients

**DID YOU KNOW?**

#### FDA Says Some Illegal Products Marketed as Dietary Supplements May Contain Hidden Drugs

Potentially harmful active pharmaceuticals (drugs) continue to be identified in over-the-counter products marketed as dietary supplements.

From 2007 through 2016, FDA studies showed that unapproved *drug* ingredients were identified in 776 products. These products were tainted with drugs, and yet many were marketed as dietary supplements or even foods. What's more, 157 of the tainted products (20.2%) contained *more than one* undeclared ingredient.

These products were commonly marketed for weight loss, muscle building, etc. and often marketed as products that provide an immediate or prescription drug-like effect.

### Risk Outweighs Reward: An Inside Look at Bodybuilding Products

Bodybuilding products are typically marketed as pills, powders, energy bars, or drinks. In a society where sports achievements are often idolized, it's understandable that some athletes may look for a "shortcut" to build muscles and increase strength. "Bodybuilding" products include "pre-workout," "workout," and "recovery" products.

It is not uncommon for bodybuilding products sold online or in retail stores to be labeled as dietary supplements. Some may even make safety claims, such as stating that they don't cause liver damage. But FDA has cautioned that bodybuilding products can contain steroids or steroid-like substances. These ingredients are associated with potentially serious health risks, including life-threatening liver injury.

Many bodybuilding products are not dietary supplements at all. They are illegally marketed, unapproved drugs that have not been reviewed for safety, effectiveness, or quality.

That means consumers are unknowingly at risk of ingesting dangerous ingredients from products that promote "miraculous" results or make empty promises.

**HEALTH ALERT:** It is especially difficult to know whether sports supplements are safe because it's unusual to have long-term studies that focus on teens. Products marketed as sports supplements also may contain harmful drugs or additives that are *not listed on the label*.



That's why it is *critical* to talk to your healthcare provider if you're considering taking a sports supplement.



## BACKGROUND INFORMATION

**What is a Steroid?**

The term “steroid” refers to a type of compound that has a specific molecular structure. Generally speaking, steroids mimic hormones that are produced by glands in the human body. But there are different *types* of steroids. Some are used to treat health problems—but others can be dangerous.

*Corticosteroids:* These are common steroids that are taken—usually for a short time—for a variety of health issues. Corticosteroids are similar to the hormones that your adrenal glands make to fight stress associated with illnesses and injuries. They also reduce inflammation and affect the immune system. Corticosteroids are a class of drugs and are often prescribed by a healthcare provider for the treatment of:

- Arthritis
- Asthma
- Autoimmune diseases such as lupus and multiple sclerosis
- Skin conditions such as eczema and rashes
- Some kinds of cancer

Because they are strong medicines, they can cause side effects such as weakened bones. That’s why people usually take them for as short a time as possible, and it’s important to always follow the instructions from healthcare providers.

*Anabolic steroids:* These steroids can have **harmful effects**. They mimic the actions of the male sex hormone, *testosterone*: they promote the growth of cells, especially in muscle, and maintain or increase male physical characteristics. Anabolic steroids are a class of drugs that are considered controlled substances, subject to very strict regulations, and only legally available with a doctor’s prescription.

In the medical community, anabolic steroids are also known as anabolic-androgenic steroids (AAS). These synthetically produced substances replicate naturally occurring testosterone; “anabolic” means muscle-building, and “androgenic” indicates increased male sexual characteristics.

Sources: [Medline steroid information](#) and [Mayo Clinic steroid information](#)

To learn more about bodybuilding products and FDA’s warnings about them, visit: <https://www.fda.gov/consumers/consumer-updates/caution-bodybuilding-products-can-be-risky>

**Steroid- Related Risk Prevention Efforts**

- 1990** Congress passed the **Anabolic Steroid Act of 1990**, amending the Controlled Substances Act to provide criminal penalties relating to the use of anabolic steroids and including more than 24 substances under the definition of anabolic steroid.
- 2004** The **Anabolic Steroid Control Act of 2004** banned over-the-counter steroid precursors (substances the human body can convert into steroids), increased penalties for making, selling, or possessing them, and funded preventive education to children. The Anabolic Steroid Control Act largely gave the Drug Enforcement Administration (DEA) authority to schedule steroids into drug categories.
- 2016** FDA approves new changes to testosterone labeling regarding the risks associated with abuse and dependence of testosterone and other anabolic androgenic steroids (AAS) <https://www.fda.gov/drugs/drug-safety-and-availability/fda-approves-new-changes-testosterone-labeling-regarding-risks-associated-abuse-and-dependence>

**DID YOU KNOW?**

The U.S. Drug Enforcement Agency (DEA) oversees controlled substances. Drugs are placed on this list based upon the substance’s medical use, potential for abuse, and safety or dependence liability. Learn more here: <https://www.dea.gov/controlled-substances-act>



# BACKGROUND INFORMATION



## Anabolic Steroids: Under the Microscope

As tempting as a “quick fix” to increase muscle size might sound, there are *frightening* risks in using anabolic steroids. For many years, public health experts have warned about the potentially dangerous effects of these drugs, *especially* among teens. According to the American Medical Association (AMA), anabolic steroids are considered toxic (poisonous).

According to AMA, risks include:

- Hair loss
- Severe acne
- Liver injury
- Blood clots in the lungs or veins
- Heart attack and stroke
- Seizures
- Anxiety, fear, depression, and mood changes
- Irritability and “steroid rage” (sudden random outbreaks of anger)
- Reduced mature height
- Injury to ligaments, bone, and cartilage that hasn’t grown as quickly as muscles
- Altered function of the ovaries in young women—even after discontinued use
- Kidney damage
- Sudden death



**Creatine** in the body helps make energy for muscle contractions. While it can help athletes have short bursts of intense exercise with short recovery times, studies have rarely explored whether it can be safely used by teens. Research shows that it can harm the kidneys, so doctors typically do not recommend it for those under 18. Side effects include:

- weight gain
- joint stiffness
- muscle cramping
- nausea
- headaches



### DID YOU KNOW?

The American Academy of Pediatrics advises against using creatine. But a related study\* has shown that health food store employees frequently recommend creatine and testosterone “boosters” to male high school athletes when they visit their stores as customers. Don’t rely on a store clerk for advice about supplements – instead, rely on your doctor’s advice.

\* *Dietary Supplements and Young Teens: Misinformation and Access Provided by Retailers* <https://pediatrics.aappublications.org/content/139/2/e20161257>

## Enhance Your Athleticism the Healthy Way: Four Proven Steps

- Get plenty of sleep.
- Eat a healthy diet. Consult a physician or dietitian if you feel that you need advice.
- Use a safe training plan. Ask a coach or fitness instructor for guidance.
- Avoid alcohol and tobacco/nicotine products.

## Examples of Common Sports Supplement Ingredients

**Amino acids** help build muscle. Examples include glutathione, cysteine, arginine, leucine, glutamine, and citrulline. Despite their typical packaging claims, such as “greater endurance” and “reduced soreness,” most studies do not show benefits of taking amino acid supplements. They can cause side effects and have not been studied to determine safety for use by teens.

**Protein supplements** are typically made of the proteins *casein* and *whey*. They are usually marketed as powders that can be mixed with water, milk, milk substitute, or other liquid. But while protein supplement labels often claim the product(s) will build muscles, the reality is that most people get all the protein they need by eating a balanced diet.

A protein supplement may help someone who doesn’t get enough protein in their diet; for example, if they are vegan, recovering from an injury, or experiencing a rapid growth period. While they usually don’t cause serious side effects, high doses can cause:

- thirst
- bloating
- cramps
- diarrhea
- lack of appetite
- tiredness

As with other nutrients, the best choice is to get protein from eating nutrient-dense foods such as eggs.



## BACKGROUND INFORMATION

## DID YOU KNOW?

Another common ingredient in bodybuilding or weight loss supplements is caffeine.

**Stay tuned for Module 3!**

Always read the label to see what ingredients are listed in the supplement you are considering. Then do your research! The U.S. Department of Agriculture's (USDA) list of Dietary Supplements for Athletes includes a list of Dietary Supplements for Exercise and Athletic Performance that can help: <https://www.nutrition.gov/topics/dietary-supplements/dietary-supplements-athletes>. The National Institutes of Health, Office of Dietary Supplements, also provides many fact sheets for dietary supplements that are listed alphabetically, including fact sheets on dietary supplements for exercise & athletic performance and dietary supplements for weight loss: <https://ods.od.nih.gov/factsheets/list-all>.

### Fad Diets: *Not* a Miracle Cure

**Weight loss/weight control supplements** can have serious adverse effects on teens and young adults.

In 2019, FDA conducted a study based upon 10+ years of adverse event reports (just under 1,000 reports) for weight loss supplements for people up to age 25. Severe medical events listed in these reports included death, disability, life-threatening events, hospitalization, emergency room visits, and/or required intervention to prevent permanent disability. It was found that these supplements were associated with almost three times the risk for severe symptoms than vitamin supplements. Source: Journal of Adolescent Health (report abstract: [https://www.jahonline.org/article/S1054-139X\(19\)30163-6/fulltext](https://www.jahonline.org/article/S1054-139X(19)30163-6/fulltext))

### Why People “Diet”

There are different reasons people choose to monitor their diet. Maybe they are at an unhealthy weight according to CDC guidelines and are monitoring their nutrient intake and activity. Maybe they just think they'd look and feel better. Or maybe they participate in sports and want to be in top condition. Whatever the reason, sometimes people consider trying dietary supplements that promise quick and “miraculous” results. But, just as with other dietary supplement claims, do they sound too good to be true?

It is important to remember that people need calories to keep their bodies running well. That's why a diet without a variety of nutrient-dense foods can be harmful. It's also why diets that promote cutting out certain nutrient groups (like carbohydrates) or eating only limited foods (like cabbage soup or grapefruit) are a bad idea, and are sometimes dangerous. These scenarios would make it extremely hard—if not impossible—to get the vitamins, minerals, and other nutrients your body needs.

### Don't Let Dietary Habits Become Dangerous

Sometimes, bad situations can affect eating—examples could be a stressful homelife or difficulty at school. This can sometimes lead to eating disorders like anorexia (eating too little), bulimia (vomiting after eating), or bingeing (feeling an inability to stop eating). These conditions are unhealthy and dangerous.

Warning signs that your food habits may have become dangerous are:

- Thinking about food all the time—or having a fear of food
- Restricting activities or avoiding family and friends because of food or need to exercise
- Wearing baggy clothes as a way to hide thinness
- Vomiting after meals or using laxatives
- Feeling weak, lightheaded, or dizzy from not eating
- Taking dietary supplements that promise weight loss
- Continuing to diet, even if you are at a healthy weight. CDC offers excellent information for assessing your healthy weight: <https://www.cdc.gov/healthyweight/assessing/index.html>
- Eating in secret or feeling out of control when you eat

If you or a friend are experiencing any of these eating issues, talk to a trusted adult or your healthcare professional.

To maintain a healthy weight, the Nutrition Facts label can be your go-to guide. Remember to check out *Science and Our Food Supply: Using the Nutrition Facts Label to Make Healthy Food Choices* for tips that ensure a balanced and nutrient-rich diet.

Adapted from [The Deal With Diets](#)

# BACKGROUND INFORMATION



Instead of considering a quick fix, try these ideas:

- Choose healthy meals and snacks. (Check out *Science and Our Food Supply: Using Nutrition Facts Label to Make Healthy Food Choices* for guidance <https://www.fda.gov/media/109430/download>.)
- Aim to eat more fruits, veggies, and whole grains, and drink water instead of sugary beverages like sports drinks or sodas.
- Cut back on meats high in fat (like burgers and hot dogs), fried foods, sweets, and other junk food.
- Get regular exercise. It helps you maintain a healthy weight, promotes normal growth, and can help you feel great! (CDC has a great online resource for exercise and activity inspiration. Check out **Active People, Healthy Nation** for ideas.)

**DID YOU KNOW?**

Everyone needs fat in their diet for their body to function properly. About 35% of your total calories should come from fat.

### Dietary Supplement Recalls: At a Glance

- FDA can take action to remove products from the market, but the agency must first establish that such products are “adulterated” (tainted or unsafe) or “misbranded” (labeling is false or misleading).
- While FDA can issue a *mandatory* recall for a dietary supplement, manufacturers usually *voluntarily* recall products of concern.
- Dietary supplements comprise only a small portion of total FDA recalls: just 2% of more than 800 recalls initiated in 2019 involved dietary supplement products.

### Alerting FDA: When and How to Report a Dietary Supplement

As you learned in Module 1, dietary supplements usually are not reviewed by FDA before they are sold to the public. That’s why it’s important for everyone—consumers, healthcare professionals, and industry members—to report issues, called “adverse events,” to FDA. Adverse events include reactions/symptoms or illnesses you might experience after taking a dietary supplement. The reports help the Agency to take action to protect the public from unsafe products.

### Recognizing Serious Reactions or Illnesses

Adverse events from taking dietary supplements can range from itching, fatigue, and diarrhea, to severe joint/muscle pain, heart palpitations, and hospitalization.

- Itching, rash, hives, throat/lip/tongue swelling, wheezing
- Low blood pressure, fainting, chest pain, shortness of breath, palpitations, irregular heartbeat
- Severe, persistent nausea, vomiting, diarrhea, or abdominal pain
- Fatigue or appetite loss
- Yellowing skin/eyes
- Severe joint/muscle pain
- Marked mood (irritability, anxiety), cognitive, or behavioral changes, thoughts of suicide
- Difficulty urinating, decreased urination, blood in urine, or dark urine
- Blood in stool, vomit, or sputum
- Abnormal bleeding from nose or gums
- Slurred speech, one-sided weakness of face, arm, leg, vision (these are signs of stroke)
- Visit to emergency room or hospitalization

Contact your healthcare provider if you have any of these adverse reactions.







# BACKGROUND INFORMATION

## When to Report

If you think that a dietary supplement may have caused one of these serious reactions or illnesses, **stop using the product immediately** and contact your healthcare provider. Then fill out a safety report through the Safety Reporting Portal to submit your complaint to FDA.

Here's how:

- Go to the Department of Health and Human Services **Safety Reporting Portal** (<https://www.safetyreporting.hhs.gov/SRP2/en/Home.aspx?sid=6ee28a3a-aa2f-4480-92c4-b7ea22b91a81>).
- After logging in or choosing to report as a guest, select the option "Start a new report" and choose "Dietary Supplement Report (voluntary)"
- Include as much detail as you can. Complete reports are the most helpful, but even a small amount of information can help FDA to identify potentially dangerous products.



## Before You Start

Check out the [FAQ](#) (Frequently Asked Questions) page on the Safety Reporting Portal; you will learn about how to use the portal, how to complete and submit a report, what happens to the report, answers to technical questions, and so much more.

FDA can help if you have any problems reporting a dietary supplement.

- If you need technical support to complete your report, contact [SRPSupport@fda.hhs.gov](mailto:SRPSupport@fda.hhs.gov)
- If you have questions that weren't addressed on the FAQ, contact [DSRSupport@fda.hhs.gov](mailto:DSRSupport@fda.hhs.gov)

## FDA Offers Information on Specific Dietary Supplement Ingredients

The two helpful resources below provide in-depth information about dietary supplement products, ingredients, and other supplements. You can compare these resources to the labels of dietary supplements you are investigating.

### 1. FDA Dietary Supplement Products and Ingredients:

Lists selected products that FDA has determined are **unsafe or misleading**.

### 2. FDA Dietary Supplement Ingredient Advisory List:

Lists products that FDA is **currently evaluating**.

## Products and Ingredients List

As you have learned, FDA can take action to remove products from the market if they find them to be adulterated (the product is unsafe) or misbranded (the labeling is false or misleading). As of 2021, the following ingredients have been the subject of FDA action and/or statements:

- Acacia rigidula
- BMPEA
- Cesium Chloride
- DMAA
- DMBA
- DMHA
- Methysynephrine
- Phenibut
- Picamilon
- Pure Powdered Caffeine
- Tianeptine

## Ingredient Advisory List

This list includes ingredients that do not appear to be lawfully included in dietary supplements. It's important to be aware of this list and compare it to the labels of dietary supplements you are investigating. If an ingredient is on this list, it doesn't necessarily mean that it is NOT safe; it means FDA is taking steps to further evaluate the ingredient. The list includes synonyms for the named ingredients, to help you recognize them on the label.

As of 2021, these are the ingredients on the list:

- 1,4-DMAA
- 5-Alpha-Hydroxy-Laxogenin
- Andarine
- Bismuth nitrate
- Higenamine
- Hordenine
- N-Methyltyramine
- Octopamine
- Sodium tetrachloroaurate
- Sulbutiamine

## BACKGROUND INFORMATION



### FDA On the Job: Reviewing “Adverse Event” Reports for Bodybuilding Products

FDA tracks and reviews adverse event reports submitted by physicians and consumers. This includes reports made about anabolic steroids between July 2009 and December 2016. For example, during this time, 35 reports showed evidence of serious liver injury. FDA followed up on these reports and, where applicable, notified companies of violative products and advised consumers to immediately stop using over-the-counter body-building products labeled or promoted to contain steroid and steroid-like substances due to the risk of serious liver injury and other adverse health consequences.

By studying these reports, FDA learned that bodybuilding products are often promoted as “hormone products” and/or as “alternatives to anabolic steroids” to increase muscle mass and strength. In fact, while many of these products make claims about their ability to enhance or diminish androgen, estrogen, progesterin-like effects in the body, they actually contain anabolic steroids or steroid-like substances (for example, synthetic hormones related to testosterone).

### Case Study — DMAA: A Dangerous Ingredient

In 2013, FDA began its efforts to ensure that dietary supplements containing a stimulant called **dimethylamylamine (DMAA)** were no longer distributed or available for sale to consumers in the marketplace. This action was taken after FDA received **86 reports of illnesses and death, including heart problems and nervous system or psychiatric disorders**, associated with supplements containing DMAA.

FDA warned consumers that DMAA can pose cardiovascular risks ranging from high blood pressure to heart attacks.

Even though FDA stated publicly that DMAA is not allowed in dietary supplements, four years later, FDA was still finding dietary supplements containing DMAA in the marketplace. This does not mean FDA has changed its position on DMAA.

Remember: FDA’s authority for dietary supplements is all post-market – FDA does not approve dietary supplement products before they are marketed.

To learn more about hormones, see TeensHealth’s explanation of the *Endocrine System* <https://teenshealth.org/en/teens/endocrine.html?ref=search>.

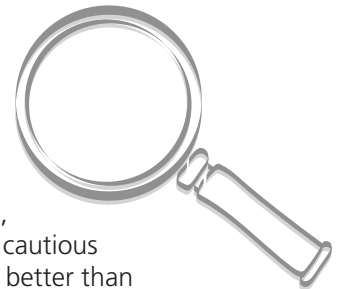
### What to Do If You’ve Taken a Bodybuilding Product

If you’re taking any bodybuilding products that claim to contain steroids or steroid-like substances, FDA recommends that you **stop taking them immediately** because of the potentially serious health risks associated with using them.

In addition, talk to a health care professional about any bodybuilding products and/or ingredients you have taken or are planning to take. Let them know if you are experiencing *any* of these symptoms: nausea, weakness or fatigue, fever, abdominal pain, chest pain, shortness of breath, jaundice (yellowing of the skin or whites of the eyes), or brown or discolored urine. It’s important!

### DO YOUR RESEARCH!

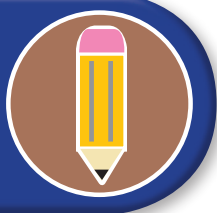
The most important thing to do when exploring or considering using a dietary supplement is to **not** assume that marketing claims, ads, etc., are accurate. If claims sound too good to be true, they probably are. You should be cautious of product claims such as “works better than [a prescription drug],” “totally safe,” or has “no side effects.”



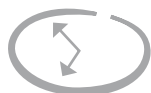
Do your own research. When you research specific supplements and their ingredients, **always use credible and impartial sources**—not product websites. Credible sources include:

- Government health sites like FDA, USDA, CDC, NIH, and Medline
- Medical organizations like AMA and American Academy of Pediatrics (AAP)
- Reputable medical/hospital sources like the Mayo Clinic, Cleveland Clinic, and the New England Journal of Medicine

Always remember to talk to your doctor, pharmacist, or other healthcare professional before deciding to purchase or use a dietary supplement.



# ACTIVITY 1: BANNED FROM SPORTS



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



## ACTIVITY AT A GLANCE

Students will learn that dietary supplements can include ingredients that are prohibited in sports and about resources that are available to answer their questions about dietary supplements and their ingredients.



## TIME TO TUNE IN

*Athlete Voices - Abby Raymond* (3:31)

<https://www.youtube.com/watch?v=d9tVERZHsBY>

## GETTING STARTED

### MATERIALS

- Internet access
- **Banned from Sports** worksheet
- **Credible Source Guide**
- **Presentation Rubric**

### ADVANCE PREPARATION

1. Divide the class into small groups.
2. Make copies of the **Banned from Sports** worksheet, **Credible Source Guide** and the **Presentation Rubric** for each group.

## INTRODUCTION

Students who participate in sports may use dietary supplements for a variety of reasons that include helping them to perform better. Sometimes the supplements may contain a prohibited ingredient that can cause the athlete to be suspended or banned from a sport for a period of time. What are some of these ingredients and how can a student athlete limit the risk of consuming them? If students have a question about a dietary supplement and/or its ingredients, where can they get reliable information about that?

Discuss the reasons a student might be suspended or banned from participating in a particular sport, and why sometimes the suspension or ban from a sport also can apply

to anyone involved with the team, including the student manager. (Students can refer to their school's *Athlete's Code of Conduct*, usually found in the Student Handbook.) The United States Anti-Doping Agency (USADA) monitors athletic competitions and provides information about banned ingredients.

Sometimes students consume dietary supplements that they believe are safe, but may contain ingredients that are prohibited and may be harmful to their health. Sometimes these ingredients are not listed on the product label. Students will research prohibited ingredients in dietary supplements that can result in a student's suspension or ban from a sport.





# BANNED FROM SPORTS

## STUDENT PROCEDURE

### Day 1

1. Watch the video – *Athlete Voices - Abby Raymond* (3:31) <https://www.youtube.com/watch?v=d9tVERZHsBY> and then discuss these questions with your group:

What was the banned substance in Abby's supplement? Why did Abby think the supplement was safe to take? Have you heard of other instances when people were suspended or banned from a sport? What was the reason for that suspension or ban?

What are some of the substances that can cause issues for athletes? How do athletes access these substances?

There are other substances found in supplements that are not drugs and are prohibited for athletes. What kind of ingredients might be prohibited for athletes and why do you think they are prohibited?

2. Choose and research one of the following ingredients about which FDA has expressed concerns: 1,4-DMAA; Andarine; BMPEA; DMBA; DMHA; Higenamine; Hordenine; Methylsynephrine; N-Methyltyramine; Octopamine; Picamilon. (Sources: *Supplement 411 High Risk List* <https://supplement411.org/hrl/#HighRiskList>; *Dietary Supplement Ingredient Advisory List* <https://www.fda.gov/food/dietary-supplement-products-ingredients/dietary-supplement-ingredient-advisory-list#collapseDMAA>; *Dietary Supplement Products & ingredients* <https://www.fda.gov/food/dietary-supplements/dietary-supplement-products-ingredients>.)

Use credible sources to research your selected ingredient and respond to the questions on the **Banned from Sports** worksheet.

### Day 2

1. When you finish your research, plan how your group can creatively present your findings to the class. Ideas for your presentations include a news broadcast; foldable book; poster; infographic; blog entry; video; animated slide show.
2. Each group should also prepare a simple Fact Sheet about the prohibited substance and distribute it to the other groups before they make their presentation.

### Day 3

1. Each group should distribute their Substance Fact Sheet to the class before they present their research project; allow time for everyone to quickly review it.
2. After each group makes its presentation, review their Substance Fact sheet again and add any additional information from their presentation that isn't on the sheet.
3. What sources did the group use for its information?

## REVIEW

Some dietary supplements are risky for athletes. They could contain ingredients that lead to health problems or ban the athlete from his or her sport.

## SUMMARY

It is especially difficult to know whether sports supplements are safe because it's unusual to have long-term studies that focus on teens. Sports supplements also may contain harmful drugs or additives that are *not listed on the label*.

## EXTENSIONS

Students could do one or more of the following activities:

1. Create a warning label for prohibited substances in a specific dietary supplement.
2. Research United States athletes who were banned from a sport and the impact this had on their careers (ex: Jessica Hardy).

## UP NEXT ►►►

Now that you've learned about some prohibited ingredients, let's take a closer look at some dietary supplement advertising.

# BANNED FROM SPORTS



## RESOURCES

- *Athletes and Supplements: Prevalence and Perspectives*  
<https://journals.humankinetics.com/view/journals/ijsnem/28/2/article-p126.xml>
- *Dietary Supplement Fact Sheets*  
<https://ods.od.nih.gov/factsheets/list-all>
- *Dietary Supplements for Exercise and Athletic Performance Fact Sheet*  
<https://ods.od.nih.gov/factsheets/ExerciseAndAthleticPerformance-HealthProfessional/>
- *Dietary Supplement Ingredient Advisory List*  
<https://www.fda.gov/food/dietary-supplement-products-ingredients/dietary-supplement-ingredient-advisory-list>
- *Dietary Supplement Product & Ingredients*  
<https://www.fda.gov/food/dietary-supplements/dietary-supplement-products-ingredients>
- *FAQs and Ask the Expert*  
<https://www.usada.org/athletes/substances/supplement-411/supplement-411-faqs>
- *For Swimmer, Ban Ends, but Burden Could Last*  
<https://www.nytimes.com/2010/08/08/sports/08hardy.html>
- *Medication Health Fraud*  
<https://www.fda.gov/drugs/buying-using-medicine-safely/medication-health-fraud>
- *Request Denied in Clemson Ostarine Case*  
<https://wach.com/sports/solid-orange/clemson-tailgate/request-denied-in-clemson-ostarine-case>
- *Supplement 411 High Risk List*  
<https://supplement411.org/hrl/#HighRiskList>  
(note that this link requires a user name & password)
- *Supplement 411*  
[Supplement 411 | U.S. Anti-Doping Agency \(USADA\)](#)
- *The WADA Prohibited List in Action*  
<https://www.globaldro.com/US/search>
- *Tips for Dietary Supplement Users*  
<https://www.fda.gov/food/information-consumers-using-dietary-supplements/tips-dietary-supplement-users>

# STUDENT WORKSHEET

## ACTIVITY 1: BANNED FROM SPORTS

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

1. Watch the video – *Athlete Voices - Abby Raymond*  
<https://www.youtube.com/watch?v=d9tVERZHsBY>
2. Write your responses to the following questions and then discuss with your group:
  - a. What was the banned substance in Abby's supplement?  
\_\_\_\_\_
  - b. Why did Abby think the supplement was safe to take?  
\_\_\_\_\_  
\_\_\_\_\_
  - c. Have you heard of other instances when athletes were suspended or banned from a sport? What was the reason for that suspension or ban?  
\_\_\_\_\_  
\_\_\_\_\_
  - d. What are some of the substances that can lead to issues for athletes?  
\_\_\_\_\_  
\_\_\_\_\_
  - e. How do athletes access the substances?  
\_\_\_\_\_  
\_\_\_\_\_
  - f. There are other substances found in supplements that are not drugs and are prohibited for athletes. What kind of ingredients might be prohibited for athletes and why do you think they are prohibited?  
\_\_\_\_\_  
\_\_\_\_\_
3. Select one of the following ingredients to research: 1,4-DMAA, Andarine, BMPEA, DMBA, DMHA, Higenamine, Hordenine, Methysynephrine, N-Methyltyramine, Octopamine, Ostarine, Picamilon. Use your research to answer the following questions as succinctly as possible.

**Teacher Note:** Information on these websites can be used to evaluate student answers:  
<https://www.fda.gov/food/dietary-supplements/dietary-supplement-products-ingredients> &  
<https://www.fda.gov/food/dietary-supplement-products-ingredients/dietary-supplement-ingredient-advisory-list>

  - a. What are the different names by which the ingredient is known?  
\_\_\_\_\_  
\_\_\_\_\_
  - b. In what kind of dietary supplement(s) product has the ingredient been found?  
\_\_\_\_\_  
\_\_\_\_\_

*continued on next page*



# STUDENT WORKSHEET

## ACTIVITY 1: BANNED FROM SPORTS (CONTINUED)

c. Is this ingredient normally found in a dietary supplement or is it possible that it was mistakenly added?

---

---

d. Is the ingredient legal in the United States?

---

---

e. What is the reported effect this ingredient will have on the body?

---

---

f. Have any studies been conducted about this ingredient and, if so, by whom/which organization?

---

---

g. What are the side effects of this ingredient?

---

---

h. What promises, if any, does the company marketing the ingredient offer?

---

---

i. Has the FDA issued any warning letters about this ingredient and if so, what was the warning and was there a follow-up action from the company?

---

---

j. Has the supplement that contains this ingredient been endorsed by anyone and, if so, by whom?

---

---

k. How could the *Supplement Guide: Reducing Supplement Risk* help you to make decisions about using banned substances? <https://www.usada.org/wp-content/uploads/supplement-guide.pdf>

---

---

4. When you have completed your research, create a presentation about your supplement ingredient. The presentation might be a news broadcast, foldable book, poster, infographic, blog entry, video, or animated slide show.

5. Prepare a brief Fact Sheet about your supplement ingredient for distribution to the class before your presentation.



# 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/or 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 teens, and how it is advertised.



### TIME TO TUNE IN

*Teenagers using dietary supplements* (1:00)  
<https://www.youtube.com/watch?v=hWbx-tSXOu>

*The Simple Truth: Decoding the Dietary Supplement Industry* (3:00)  
<https://www.youtube.com/watch?v=7HlvIIM-35w>

*Supplements 411 – Dietary Supplement Bottle – U.S. Anti-Doping Agency* (7:24)  
[https://www.youtube.com/watch?v=50QBwi11ncE&feature=emb\\_logo](https://www.youtube.com/watch?v=50QBwi11ncE&feature=emb_logo)



# DIETARY SUPPLEMENTS AND ADVERTISING

## GETTING STARTED

### MATERIALS

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

### ADVANCE PREPARATION

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

## INTRODUCTION

Teens may use 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.

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

1. **Do you know of any dietary supplements that teens use 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?**

You will watch a short video and read the video script about a study on teen use of dietary supplements. Working in small groups, you will choose a dietary supplement and its ingredients to research, and look at how truthful the advertisements are for the supplement. Look for credible sources to compile information about the use of that supplement (refer to the **Credible Source Guide**). Once you have completed your research, you will create a Public Service Announcement (PSA) about your dietary supplement.

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.  
*Supplement 411 High Risk List*  
<https://supplement411.org/hrl/#HighRiskList>



## 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 *Prediction 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, *Teenagers using dietary supplements*.  
<https://www.youtube.com/watch?v=hWbx-tSXOul>
3. After you watch the video, go back to the statements on the *Prediction 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 ideas.

Watch the second video, *The Simple Truth: Decoding the Dietary Supplement Industry*

<https://www.youtube.com/watch?v=7HlvIIM-35w>

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:  
*Tips for creating an effective video PSA*  
<https://www.youtube.com/watch?v=Kr4Yf1xRb7U>  
*Best Student Made PSA Ever*  
<https://www.youtube.com/watch?v=PR7BCsulWjk&feature=youtu.be>
10. Use the following questions to develop your PSA:
  - Who is your audience?
  - What is your message?
  - Which PSA format (from the first video) will best convey your message:
    - Spokesperson format
    - Voice-over PSA
    - Live Action
    - The “Silent Treatment”
  - What part of your research will you use?
  - What is your script?
  - What visuals will you use on your storyboards? Sketch your PSA frame by frame.
  - What props do you think you might need?
  - What is your production 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 PSA’s, review the reasons why you should avoid using these dietary supplements. Also discuss the advertisements you reviewed and how easy it is to be swayed by the media.
13. Watch the video, *Supplements 411 – Dietary Supplement Bottle – U.S. Anti-Doping Agency*  
[https://www.youtube.com/watch?v=50QBwi11ncE&feature=emb\\_logo](https://www.youtube.com/watch?v=50QBwi11ncE&feature=emb_logo)



# DIETARY SUPPLEMENTS AND ADVERTISING

## REVIEW

Dietary supplement product labeling can sometimes be misleading or deceptive to get consumers to buy the products. Consumers need to think carefully, research, and logically assess dietary supplement label information before buying a product.

When you research specific supplements and their ingredients, **always use credible and impartial sources—not product websites.** Credible sources include:

- Government health sites like FDA, USDA, CDC, NIH, and Medline

- Medical organizations like AMA and American Academy of Pediatrics (AAP)
- Reputable sources like the Mayo Clinic, Cleveland Clinic, and the New England Journal of Medicine

**Always** talk to your doctor, pharmacist, or other healthcare professional before deciding to purchase or use a dietary supplement.

## EXTENSIONS

Students could do one or more of the following activities:

1. Make a written PSA (instead of a video PSA) about dietary supplements, their ingredients, and advertising.
2. Write a letter of advice to a teenager who has requested information on whether or not to use a dietary supplement.
3. Research how to report a manufacturer of a dietary supplement to the FDA for an advertised claim that wasn't true.
4. Make a list of reliable sources for information about using dietary supplements.

## SUMMARY

Always read the label to see what ingredients are listed in the supplement you're considering taking. Then do your research! Without realizing it, consumers can ingest dangerous ingredients from products that promote "miraculous" results or make empty promises.

## UP NEXT ▶▶▶

Now that you know more about dietary supplement marketing, let's learn more about other dietary supplements, particularly those classified as stimulants.

## DIETARY SUPPLEMENTS AND ADVERTISING



## RESOURCES

- *15 Supplement Ingredients to Always Avoid*  
<https://www.consumerreports.org/vitamins-supplements/15-supplement-ingredients-to-always-avoid>
- *Best Student Made PSA Ever (0:55)*  
<https://www.youtube.com/watch?v=PR7BCsuIWjk&feature=youtu.be>
- *Dietary Supplements and Young Teens: Misinformation and Access Provided by Retailers*  
<https://pediatrics.aappublications.org/content/139/2/e20161257>
- *Dietary Supplement Fact Sheets*  
<https://ods.od.nih.gov/factsheets/list-all>
- *Dietary Supplements for Athletes*  
<https://www.nutrition.gov/topics/dietary-supplements/dietary-supplements-athletes>
- *Dietary Supplements for Exercise and Athletic Performance; Fact Sheet for Consumers*  
<https://ods.od.nih.gov/pdf/factsheets/ExercisePerformance-Consumer.pdf>
- *Dietary Supplements for Exercise and Athletic Performance; Fact Sheet for Health Professionals*  
<https://ods.od.nih.gov/factsheets/ExerciseAndAthleticPerformance-HealthProfessional>
- *Dietary Supplements for Weight Loss; Fact Sheet for Consumers*  
<https://ods.od.nih.gov/pdf/factsheets/WeightLoss-Consumer.pdf>
- *Dietary Supplements for Weight Loss; Fact Sheet for Health Professionals*  
<https://ods.od.nih.gov/factsheets/WeightLoss-HealthProfessional>
- *Dangerous Ingredients Found in Dietary Supplements (3:06)*  
<https://www.youtube.com/watch?v=cJIT5Sdr-YQ>
- *Sports Supplements*  
<https://kidshealth.org/en/teens/sports-supplements.html>
- *Teenagers using dietary supplements (1:00)*  
<https://www.youtube.com/watch?v=hWbx-tSXOuI>
- *The Simple Truth: Decoding the Dietary Supplement Industry (3:00)*  
<https://www.youtube.com/watch?v=7HlvIIM-35w>
- *Supplements 411 – Dietary Supplement Bottle – U.S. Anti-Doping Agency (7:24)*  
[https://www.youtube.com/watch?v=50QBwi11ncE&feature=emb\\_logo](https://www.youtube.com/watch?v=50QBwi11ncE&feature=emb_logo)
- *Tips for creating an effective video PSA (5:20)*  
<https://www.youtube.com/watch?v=Kr4Yf1xRb7U>

# STUDENT WORKSHEET

## ACTIVITY 2: DIETARY SUPPLEMENTS AND ADVERTISING

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

1. Read each of the statements below and write A (Agree) or D (Disagree) in the Before Column.
2. Watch the video, *Teenagers using dietary supplements*: <https://www.youtube.com/watch?v=hWbx-tSXOul>
3. Review the Statements on the Prediction Guide and compare your opinions with information provided in the video.
4. In the After column, write whether the information from the video Agrees (A) or Disagrees (d) with the statement.
5. In the space under each Statement, cite the information from the video that supports or refutes your original opinion.

Prediction Guide		
Before	STATEMENT	After
	Dietary supplements can cause serious harm or even death.	
	It is ok to combine dietary supplements with prescription medications without consulting a doctor.	
	Dietary supplements sold for weight loss, muscle building or to increase energy are no more risky than vitamin supplements.	
	Dietary supplements may cause harm because they may contain dangerous, unlabeled ingredients.	



# STUDENT WORKSHEET

## ACTIVITY 2: DIETARY SUPPLEMENTS AND ADVERTISING (CONTINUED)

To prepare for the next part of this activity, watch *The Simple Truth: Decoding the Dietary Supplement Industry* (3:00)  
<https://www.youtube.com/watch?v=7HlvIIM-35w>

What is the name of the dietary supplement you will research? \_\_\_\_\_

**Research Questions: As you answer these questions, cite the source for each response. (Refer to the Credible Source Guide.)**

### 1. About the Dietary Supplement and Its Ingredients

a. What are the ingredients in your supplement?

---

---

b. Why would someone use this supplement?

---

---

c. What scientific evidence, if any, is there to support this use?

---

---

d. What are the active ingredients in the supplement?

---

---

e. What are the short-term and long-term effects of using this dietary supplement?

---

---

f. What harmful ingredients, if any, are found in the supplement and why are they harmful?

---

---

g. In which types of stores could you find this supplement? (ex: grocery)

---

---

*continued on next page*

# STUDENT WORKSHEET

## ACTIVITY 2: DIETARY SUPPLEMENTS AND ADVERTISING (CONTINUED)

h. How safe is the use of this dietary supplement for high school students?

---

---

i. Who might use this supplement?

---

---

### 2. About the Advertisement(s) for the Dietary Supplement and/or Its Ingredients

a. Does the supplement promise a quick fix or does it sound too good to be true?

---

---

b. Does the supplement promote any unhealthy habits?

---

---

c. Is there a slogan that is used to promote this supplement?

---

---

d. If so, what is it, and who is the target audience?

---

---

e. How truthful is the slogan?

---

---

f. Does the advertisement provide information based on a personal story or testimonial rather than on facts?

---

---

### 3. If you want to find truthful information about this supplement, where would you look?

---

---

*continued on next page*

# STUDENT WORKSHEET

## ACTIVITY 2: DIETARY SUPPLEMENTS AND ADVERTISING (CONTINUED)

### PSA Planning

Watch these videos to help you create your PSA.

*Tips for creating an effective video PSA (5:20)*

<https://www.youtube.com/watch?v=Kr4Yf1xRb7U>

*Best Student Made PSA Ever (0:55)*

<https://www.youtube.com/watch?v=PR7BCsuIWjk&feature=youtu.be>

Write down the tips you will use from the videos as you create your PSA.

---

---

---

---

---

---

### Keep these questions in mind as you plan your PSA:

- Who is your audience?
- What is your message?
- Which PSA format (from the first video) will best convey your message:
  - Spokesperson format
  - Voice-over PSA
  - Live Action
  - The “Silent Treatment”
- What part of your research will you use?
- What is your script?
- What visuals will you use on your storyboards? Sketch your PSA frame by frame.
- What props do you think you might need?
- What is your production plan?
- What is your visual display plan?

Once your PSA plan is complete you can begin filming. A strong plan, with a tightly edited script, will result in a good PSA. Your PSA might require several edits and/or “takes” until you are ready to share it with your class.

As a final wrap-up, view this video:

*Supplements 411 – Dietary Supplement Bottle – U.S. Anti-Doping Agency (7:24)*

[https://www.youtube.com/watch?v=50QBwi11ncE&feature=emb\\_logo](https://www.youtube.com/watch?v=50QBwi11ncE&feature=emb_logo)

## STUDENT WORKSHEET ANSWERS

## ACTIVITY 1: BANNED FROM SPORTS

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

1. Watch the video – *Athlete Voices - Abby Raymond*  
<https://www.youtube.com/watch?v=d9tVERZHsBY>
2. Write your responses to the following questions and then discuss with your group:
  - a. What was the banned substance in Abby's supplement?  
*Ostarine*
  - b. Why did Abby think the supplement was safe to take?  
*She trusted the supplier, who was a family friend. The supplier had assured her that she had nothing to worry about.*
  - c. Have you heard of other instances when athletes were suspended or banned from a sport? What was the reason for that suspension or ban?  
*In 1988, an Olympic sprinter was stripped of his gold medal when he tested positive for a steroid (stanozolol).  
 NFL and MLB players have also been suspended for testing positive for performance-enhancing drugs (PEDs).*
  - d. What are some of the substances that can lead to issues for athletes?  
*Certain substances that can lead to issues include performance-enhancing drugs, such as anabolic steroids, human growth hormone, some stimulants, and antidiuretics. Substances that are chemically similar to the exact banned substances can also generate problems.*
  - e. How do athletes access the substances?  
*Athletes can obtain products containing these substances from companies that advertise in magazines and online, and promise that their product provides results, without stating that it may contain banned substances.*
  - f. There are other substances found in supplements that are not drugs and are prohibited for athletes. What kind of ingredients might be prohibited for athletes and why do you think they are prohibited?  
*Substances that may be prohibited include stimulants and growth factors. These substances are likely prohibited because they give the athletes an unnatural advantage and may harm their health.*
3. Select one of the following ingredients to research: 1,4-DMAA, Andarine, BMPEA, DMBA, DMHA, Higenamine, Hordenine, Methylsynephrine, N-Methyltyramine, Octopamine, Ostarine, Picamilon. Use your research to answer the following questions as succinctly as possible.  
**Teacher Note:** Information on these websites can be used to evaluate student answers:  
<https://www.fda.gov/food/dietary-supplements/dietary-supplement-products-ingredients> &  
<https://www.fda.gov/food/dietary-supplement-products-ingredients/dietary-supplement-ingredient-advisory-list>
  - a. What are the different names by which the ingredient is known?  
*Sample answer 1: Ostarine is also known as MK-2866, enobasarm, GTx-024.*  
*Sample answer 2: Hordenine is also known as anhaline, N,N-Dimethyltyramine, peyocactin.*
  - b. In what kind of dietary supplement(s) product has the ingredient been found?  
*Sample answer 1: Ostarine may be found in products marketed as bodybuilding supplements.*  
*Sample answer 2: Hordenine is found in athletic performance and weight loss supplements.*

continued on next page



# STUDENT WORKSHEET ANSWERS

## ACTIVITY 1: BANNED FROM SPORTS (CONTINUED)

- c. Is this ingredient normally found in a dietary supplement or is it possible that it was mistakenly added?  
Sample answer 1: Ostarine may be added intentionally to the products marketed as supplements by some companies. It might also be added when products are prepared on improperly cleaned equipment.  
Sample answer 2: Hordenine has been intentionally added to dietary supplements.
- d. Is the ingredient legal in the United States?  
Sample answer 1: Not for use in dietary supplements. Ostarine has been subject to clinical investigations as a new drug, and products containing ostarine are not dietary supplements.  
Sample answer 2: Hordenine is on FDA's Dietary Supplement Ingredient Advisory List. As such, hordenine does not appear to be a lawful ingredient in dietary supplement.
- e. What is the reported effect this ingredient will have on the body?  
Sample answer 1: Enhanced muscle growth, liver damage  
Sample answer 2: Hordenine is reported to be used for weight loss and improved athletic performance. Hordenine has also been advertised as increasing immunity to infectious diseases.
- f. Have any studies been conducted about this ingredient and, if so, by whom/which organization?  
Sample answer 1: One study was conducted by scientists at Universities in Germany studying the effectiveness of ostarine in increasing muscle mass and physical function. <https://www.frontiersin.org/articles/10.3389/fendo.2020.556581/full>  
Sample answer 2: There is no good evidence that shows hordenine is effective for losing weight, improving athletic performance, or increasing immunity to infectious diseases.
- g. What are the side effects of this ingredient?  
Sample answer 1: Liver damage, constipation, diarrhea, headache, nausea, fever, heart attack, stroke  
Sample answer 2: The side effects from using hordenine could be increased heart rate, high blood pressure, and increased risk of kidney stones.
- h. What promises, if any, does the company marketing the ingredient offer?  
Sample answer 1: One of the marketing promises is an increase in muscle mass.  
Sample answer 2: A dietary supplement containing hordenine has been marketed as increasing your immunity to infectious diseases.
- i. Has the FDA issued any warning letters about this ingredient and if so, what was the warning and was there a follow-up action from the company?  
Sample answer 1: The FDA has issued several warning letters to manufacturers of products marketed as dietary supplements that contain ostarine, ordering them to stop manufacturing the supplement. In one instance the manufacturer was sentenced to jail. <https://www.justice.gov/opa/pr/owner-sport-supplement-company-sentenced-unlawful-distribution-steroid-drugs>  
Sample answer 2: FDA issued a warning letter to a company manufacturing a dietary supplement containing hordenine to recall the supplement. Subsequently, FDA went to court and filed a consent decree of permanent injunction against the company for violating federal law by distributing products containing hordenine HCl and vitamin D as preventions or treatments for COVID-19.
- j. Has the supplement that contains this ingredient been endorsed by anyone and, if so, by whom?  
Sample answer 1: Ostarine is banned by USADA. Products marketed as dietary supplements containing ostarine have not been endorsed by anyone.  
Sample answer 2: A supplement containing hordenine was endorsed by a 'Top Doctor' who believed it could help the current pandemic. The supplement was removed from the market.
- k. How could the *Supplement Guide: Reducing Supplement Risk* help you to make decisions about using banned substances? <https://www.usada.org/wp-content/uploads/supplement-guide.pdf>  
It lists substances that should be avoided. The guide also includes information about how to choose healthy foods with ingredients that can help performance.
4. When you have completed your research, create a presentation about your supplement ingredient. The presentation might be a news broadcast, foldable book, poster, infographic, blog entry, video, or animated slide show.
5. Prepare a brief Fact Sheet about your supplement ingredient for distribution to the class before your presentation.

# STUDENT WORKSHEET ANSWERS

## ACTIVITY 2: DIETARY SUPPLEMENTS AND ADVERTISING

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

1. Read each of the statements below and write A (Agree) or D (Disagree) in the Before Column.
2. Watch the video, *Teenagers using dietary supplements*: <https://www.youtube.com/watch?v=hWbx-tSXOul>
3. Review the Statements on the Prediction Guide and compare your opinions with information provided in the video.
4. In the After column, write whether the information from the video Agrees (A) or Disagrees (d) with the statement.
5. In the space under each Statement, cite the information from the video that supports or refutes your original opinion.

Prediction Guide		
Before	STATEMENT	After
	<p>Dietary supplements can cause serious harm or even death.</p> <p>A study released said that teenagers using dietary supplements to lose or gain weight can be putting themselves in serious harm or risk.</p> <p>The news story cited a study that said teenagers who use dietary supplements to lose or gain weight can put themselves at risk for serious harm and even death.</p>	Agree.
	<p>It is ok to combine dietary supplements with prescription medications without consulting a doctor.</p> <p>Combining dietary supplements with prescription drugs can be harmful.</p>	Disagree.
	<p>Dietary supplements sold for weight loss, muscle building or to increase energy are no more risky than vitamin supplements.</p> <p>The report cited that dietary supplements, not vitamins, were responsible for the majority of unhealthy incidents.</p>	Disagree.
	<p>Dietary supplements may cause harm because they may contain dangerous, unlabeled ingredients.</p> <p>Dietary supplements can contain ingredients not listed on the label.</p>	Agree.

continued on next page

# STUDENT WORKSHEET ANSWERS

## ACTIVITY 2: DIETARY SUPPLEMENTS AND ADVERTISING (CONTINUED)

To prepare for the next part of this activity, watch *The Simple Truth: Decoding the Dietary Supplement Industry* (3:00)  
<https://www.youtube.com/watch?v=7HlVlIM-35w>

What is the name of the dietary supplement you will research? Beta-alanine

**Research Questions: As you answer these questions, cite the source for each response. (Refer to the Credible Source Guide.)**

### 1. About the Dietary Supplement and Its Ingredients

a. What are the ingredients in your supplement?

Beta-alanine is usually the only ingredient in this supplement.

b. Why would someone use this supplement?

Someone might use this supplement in hopes of lowering lactic acid build up and increasing athletic performance and endurance.

c. What scientific evidence, if any, is there to support this use?

Some studies have shown small increases in athletic performance in events like swimming.

d. What are the active ingredients in the supplement?

Beta-alanine, which is an amino acid found in foods, is the active ingredient.

e. What are the short-term and long-term effects of using this dietary supplement?

Taking 800 mg of Beta-alanine can cause a tingling sensation called paresthesia. The effects of long-term use are unknown.

f. What harmful ingredients, if any, are found in the supplement and why are they harmful?

Beta-alanine is the only ingredient. It may interact with some heart medications and drugs for erectile dysfunction. Safety for children has not been established. <https://www.webmd.com/vitamins-and-supplements/beta-alanine-uses-and-risks>

g. In which types of stores could you find this supplement? (ex: grocery)

This product can be purchased at superstores and nutritional supplement shops.

*continued on next page*

# STUDENT WORKSHEET ANSWERS

## ACTIVITY 2: DIETARY SUPPLEMENTS AND ADVERTISING (CONTINUED)

h. How safe is the use of this dietary supplement for high school students?

According to the NIH, studies show that using Beta-alanine for 2-4 weeks period at the recommended dose is safe for healthy individuals. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4501114/>

i. Who might use this supplement?

Athletes who experience neuromuscular fatigue may be interested in using the supplement.

### 2. About the Advertisement(s) for the Dietary Supplement and/or Its Ingredients

a. Does the supplement promise a quick fix or does it sound too good to be true?

The supplement promises that the user will be able to exercise harder and longer with less muscle fatigue.

b. Does the supplement promote any unhealthy habits?

The advertising warns that pregnant women should not use it and states that users should consult their physician if they have any adverse reactions. It doesn't seem to promote any unhealthy habits.

c. Is there a slogan that is used to promote this supplement?

Yes. It promises to "Support Lean Muscle Gain".

d. If so, what is it, and who is the target audience?

The target audience seems to be people who want to add muscle quickly and avoid muscle fatigue during exercise.

e. How truthful is the slogan?

The use of the term "lean" in the slogan makes one wonder what "non-lean" muscle would be. Research seems to point to the fact that it can reduce muscle fatigue, but there is no research that supports this slogan directly.

f. Does the advertisement provide information based on a personal story or testimonial rather than on facts?

There were no personal stories shared in the advertisements.

### 3. If you want to find truthful information about this supplement, where would you look?

To find truthful information, one should seek research studies published in peer review journals, or information found on .gov websites such as FDA or NIH.

*continued on next page*



# STUDENT WORKSHEET ANSWERS

## ACTIVITY 2: DIETARY SUPPLEMENTS AND ADVERTISING (CONTINUED)

### PSA Planning

Watch these videos to help you create your PSA.

*Tips for creating an effective video PSA (5:20)*

<https://www.youtube.com/watch?v=Kr4Yf1xRb7U>

*Best Student Made PSA Ever (0:55)*

<https://www.youtube.com/watch?v=PR7BCsuIWjk&feature=youtu.be>

Write down the tips you will use from the videos as you create your PSA.

- Include the 5 W's - Who, What, Where, When and Why.

- Gather facts and information and write a script.

---

---

---

---

---

#### Keep these questions in mind as you plan your PSA:

- Who is your audience?
- What is your message?
- Which PSA format (from the first video) will best convey your message:
  - Spokesperson format
  - Voice-over PSA
  - Live Action
  - The “Silent Treatment”
- What part of your research will you use?
- What is your script?
- What visuals will you use on your storyboards? Sketch your PSA frame by frame.
- What props do you think you might need?
- What is your production plan?
- What is your visual display plan?

Once your PSA plan is complete you can begin filming. A strong plan, with a tightly edited script, will result in a good PSA. Your PSA might require several edits and/or “takes” until you are ready to share it with your class.

As a final wrap-up, view this video:

*Supplements 411 – Dietary Supplement Bottle – U.S. Anti-Doping Agency (7:24)*

[https://www.youtube.com/watch?v=50QBwi11ncE&feature=emb\\_logo](https://www.youtube.com/watch?v=50QBwi11ncE&feature=emb_logo)

**Science and Our Food Supply:  
Examining Dietary Supplements  
was brought to you by...**



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

---

**Subject Matter Experts**

**FDA**

**Center for Food Safety and Applied Nutrition**  
*Office of Analytics and Outreach*  
*Office of Dietary Supplement Programs*  
*Office of Food Additive Safety*  
*Office of Nutrition and Food Labeling*

**NIH**

*Office of Dietary Supplements*

---

**Curriculum Development Experts**

**Vernon Callwood, Ed.S.**  
*Secondary Teacher*  
Charlotte Amalie High School  
St. Thomas, U.S. Virgin Islands

**Mimi Cooper, M.Ed.**  
*Lead SOFS Advisor*  
Educational Consultant  
St. Augustine, FL

**Susan Hartley, B.S.**  
*Biomedical Sciences Teacher*  
Hinkley High School  
Aurora, CO

**Laurie Hayes, B.A.**  
*Biomedicine Instructor*  
The Center for Advanced Research and Technology (CART)  
Clovis, CA

**Isabelle Howes, M.L.S.**  
*National Training Coordinator for FDA School-Based Food  
Safety & Nutrition Education Programs*  
Graduate School USA  
Washington, D.C.

**Elena Stowell, M.S. NBCT AYA Biology**  
*Biology & Earth Systems; College in the High School*  
*Biology Teacher*  
High School SOFS Advisor  
Kentwood High School  
Kent, WA

**Henie Parillon, Ed.S.**  
*Supervisor of Science, K-12*  
Orange Public Schools  
Orange, NJ

**Leah Akins Rehberg, M.Ed.**  
*Family and Consumer Science Teacher*  
Swainsboro Middle School  
Swainsboro, GA

**Peter Sykora, B.S.**  
*Science Instructor K-12*  
Middle Level SOFS Advisor  
Langdon Area High School  
Langdon, ND

**Jodi Songer Riedel, M.S. NBCT**  
*Agricultural Education Teacher, FFA Advisor*  
Wakefield High School  
Raleigh, NC

**Leanne H Thele, M.A.**  
*Science Instructor, SNHS Sponsor, Science Fair Coordinator*  
Jackson Senior High School  
Jackson, MO

**Keshia D. Williams, Ed.S. NBCT**  
*Life Science Specialist (9-12)*  
Alabama State Department of Education  
Montgomery, AL

FDA would like to thank the Professional Development Program in Food Science middle level and high school teachers from 2021 who gave valuable feedback on the piloted activities for this guide.