PROTEIN GUIDE FOR NATIONAL SCHOOL LUNCH PROGRAM

Montana Beef to School Coalition

INTRODUCTION

The Beef to School Protein Guide provides you with information on protein sources and serving size recommendations. This resource was developed by the Montana Beef to School Project, a three-year collaborative project between beef producers, processors, schools, researchers at Montana State University, National Center for Appropriate Technology, Montana Department of Agriculture, and various community partners.
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For more information:

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Offering a wide variety of animal and plant-based proteins is beneficial for many reasons.

- Exposing students to a wide variety of foods during lunch can help to develop lifelong healthy eating habits.
- Students that eat a wide variety of proteins receive diversity of nutrients.
- Plant-based proteins are usually less expensive than animal-based proteins, helping the school food service to meet budgets.
- Rotating less expensive plant-based proteins with purchases of local meats may help to balance the budget.
- Montana is the top producer of lentils in the United States. The inclusion of local plant and animal-based proteins in school lunch increases opportunities to purchase from local farmers and producers. Lentils and other legumes credit as a meat alternate or meet the vegetable – beans and peas subgroup requirement.[1]
- Plant-based protein decreases the amount of saturated fat and increases the amount of fiber in a meal, reducing the risk of chronic diseases like heart disease.[2]
- Integrating a variety of animal and plant-based proteins, particularly those that are locally produced, can contribute to a sustainable food system. A sustainable food system protects and conserves natural resources to ensure that food is available for future generations.
- Protein is an important nutrient that assists with the development and growth of the human body.[3]

What are the differences between animal-based and plant-based proteins?

Protein is a macronutrient that provides energy, vitamins, and minerals. Protein is made up of small molecules called amino acids.[3] There are essential and nonessential amino acids. Essential amino acids cannot be produced by the body and must come from food. Nonessential amino acids are made by the body in addition to being found in the diet. Amino acids can be provided by both animal and plant-based proteins.

Animal based proteins are meat and meat alternates that are produced or supplied by animals. Examples of animal-based protein commonly served in school lunch include[4]:

Meat	**Type**
Beef	Ground, steak, roast
Poultry	Poultry – chicken and turkey • Breast, ground, wings
Seafood	Clams, crab, crawfish, fish, shrimp
Game meat	Buffalo, venison
Lamb	Ground, shoulder, roast
Pork	Ground, loin chop, roast, sausage

Meat Alternatives	**Type**
Eggs	Boiled, scrambled, fried

Plant-based proteins are meat alternates that are solely supplied by plants and are a complete protein source. A complete protein provides all of the essential amino acids. Examples of plant-based protein commonly served in school lunch include[4]:

Type	**Variety**
Beans	Black Black eyed Great northern Garbanzo or chickpea Kidney Lima Pinto
Lentils	Red Green Brown Yellow Black
Peas	Green – split or whole
Nuts	Peanuts

	Tree nuts Soy nuts Nut butters
Seeds	Sunflower Sesame Pumpkin Flax
Tofu and soy products	Tempeh Soy yogurt
Grains	Quinoa Seitan Wheat
Vegetables	Broccoli Potato Zucchini

Protein Requirements

Requirements for meat or meat alternates, referred to as protein throughout this guide, are established in the Healthy Hunger-Free Kids Act of 2010 by grade level.

Grade Level	Minimum Ounces Served Per Week	Minimum Ounces Served Per Day
Kindergarten – 5th	8 – 10 ounces	1 ounce
6th – 8th	9 – 10 ounces	1 ounce
9th – 12th	10 – 12 ounces	2 ounces

The weekly requirement for each grade must be met during a five-day school week. A minimum of 1-ounce equivalent of meat or meat alternate must be served for grades Kindergarten through 8th and 2-ounces for grades 9 through 12.[5] The meat component must be served in the main dish or separated between a main dish and another food item. For a meat or meat alternate to contribute to a dish it must be a minimum of 0.25-ounce equivalent. For more information regarding meat and meat alternate serving size equivalents refer to the measurement conversion chart.

Measurement Conversion Chart Adopted from Food Buying Program for School Lunches by the USDA Department of Agriculture

This chart presents the serving size of a meat or meat alternate that is equivalent to an 1-ounce serving for school lunches. Please refer to the USDA Food Buying Guide for Child Nutrition Programs for more detail[4]:
https://foodbuyingguide.fns.usda.gov/Content/TablesFBG/USDA_FBG_Section1_MeatsAndMeatAlternates.pdf

Meat or Meat Alternate	1.0 Ounce Serving Size Equivalent
Lean beef, pork, poultry, or fish	1 ounce
Cheese	¼ cup
Yogurt	½ cup
Large Egg	½ egg
Drained and Cooked Beans	¼ cup
Nut butter	2 Tablespoons
Peanuts, tree nuts, or seeds	½ ounce
Tofu or other soy product	¼ cup

Costs

Prices of protein-rich foods vary widely depending on source, product specifications, availability, and other criteria. Below is one example of a cost comparison. Pricing data was provided by Montana businesses in November 2018.

Chickpeas, Montana Grown, Canned

$0.09 per ounce
$0.13 per 1 ounce equivalent (1/4 cup)

Ground Beef, Montana Raised and Processed, 80/20 or Leaner
$0.24 per ounce
$0.24 per 1 ounce equivalent (1 ounce)

Combine to Win

Below are several examples that incorporate plant-based proteins into main dishes. To help with student acceptance, use a mix of animal and plant-based proteins. Try using current recipes and substituting in a plant-based protein for a portion of the animal-based protein. This method makes animal-based proteins, especially local proteins, more affordable for schools to serve on a regular basis. For more ideas check out standardized recipes provided by the USDA[6]: https://www.fns.usda.gov/usda-standardized-recipe

- Stir fry with chicken and tofu
- Lentil and ground beef tacos
- Pasta with chicken and white beans
- White bean chili with chicken
- Taco bake casserole with ground turkey and pinto beans

Reference List

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4. Meat/Meat Alternate. USDA Food Buying Guide for Child Nutrition Programs. https://foodbuyingguide.fns.usda.gov/Content/TablesFBG/USDA_FBG_Section1_MeatsAndMeatAlternates.pdf. Accessed October 30, 2018.
5. Code of Federal Regulations National School Lunch Program. Ecfr.gov. https://www.ecfr.gov/cgi-bin/text-idx?SID=4c211a738d6109939c6054a6286ac109&mc=true&node=pt7.4.210&rgn=div5 -se7.4.210_110. Accessed October 30, 2018.
6. USDA Standardized Recipes. USDA Food and Nutrition Service. https://www.fns.usda.gov/usda-standardized-recipe. Accessed November 4, 2018.