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Adjusting Recipes to Meet Dietary Guidelines

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You may be one of millions of Americans trying to make some eating adjustments, and finding time-honored traditions and habits get in the way. Possible and acceptable changes take time and consideration, and should focus on the following Dietary Guidelines for Americans.

This Extension Circular provides tips to help make the Dietary Guidelines work for you by adjusting recipes for some of the foods you prepare at home. Before you begin, however, decide on your nutritional goals.

Choose a diet low in fat, saturated fat, and cholesterol. In the American diet, about 37 percent of total calories comes from fat. Most nutrition authorities recommend that the percent of total calories coming from fat should be 30 percent or less. For many Americans, that means reducing sources of fat in the diet by one-fifth.

High fat diets — especially diets high in saturated fats and cholesterol — are associated with high blood cholesterol levels, which increase risk for heart disease. High fat diets also are linked to certain types of cancer.

Fat is a very concentrated source of food energy. One gram of fat yields 9 calories, compared to 4 calories for each gram of carbohydrate or protein. High fat intakes combined with low activity levels can lead to excess body fat and problems of obesity.

One of the options to meet the dietary guidelines for fat is to make changes in recipes prepared at home.

Choose a diet with plenty of vegetables, fruits, and grain products. The Dietary Guidelines for Americans encourage eating at least three or more servings of vegetables, two or more servings of fruit, and six or more servings of grain products each day.

There are several advantages to meeting this guideline. Fruits, vegetables, and grain products are low in fat. Including them in your diet helps you meet recommendations to choose a diet with less fat. Another plus for eating fruits, vegetables, and grain products — especially whole grain products — is that you get complex carbohydrates and fiber in your diet.

Dietary Guidelines for Americans

- Eat a variety of foods.
- Maintain healthy weight.
- Choose a diet low in fat, saturated fat, and cholesterol.
- Choose a diet with plenty of vegetables, fruits, and grain products.
- Use sugars only in moderation.
- Use salt and sodium only in moderation.
- If you drink alcoholic beverages, do so in moderation.

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Kenneth R. Bolen, Director of Cooperative Extension, University of Nebraska, Institute of Agriculture and Natural Resources.

Carbohydrates are a primary energy source to fuel your body through the day. Nutritionists recommend that more than half your food energy come from carbohydrate sources. Eating foods with fiber aids in proper bowel function. Dietary fiber can reduce constipation, symptoms of diverticular disease, and hemorrhoidal problems. In countries where diets are low in fiber and complex carbohydrates but high in fat there is a tendency to have more heart disease and certain types of cancer. Why this happens is not yet clear.

When you prepare food at home you can increase fiber in several ways. One choice is to select or change recipes to use whole grain flours.

Use sugars only in moderation. Sugar consumption has increased in the American diet. Much of that extra sugar comes to us through all the caloric sweeteners added to foods during processing. Granulated sugar, brown sugar, molasses, honey, corn sweeteners and syrups are some of the sweeteners used in food processing.

The most troublesome aspect of too much sugar in diets is the havoc sugary, sticky foods play on teeth. Dental decay results from excessive eating of sticky, sugary foods. Trouble intensifies if good dental hygiene isn't practiced each day. To address this guideline through food preparation, explore ways to adjust sugar in recipes.

Use salt and sodium in moderation. United States surveys indicate average daily dietary intakes of sodium may be as high as 5000 mg per day, depending on whether salt is added during cooking or at the table. The current safe minimum intake of sodium has been set at only 500 mg daily. Individuals who are especially sensitive to high sodium intakes could be placing themselves at increased risk for high blood pressure.

If you have high blood pressure or your family history indicates you may be prone to it, consider your sodium intake and plan ways to achieve a moderate intake.

In home-prepared foods, table salt is a major contributor to the sodium level. You can reduce sodium levels by changing the amount of salt in a recipe and by removing the salt shaker from the dinner table. For individuals who need to reduce sodium intake, those are two easy options to consider.

Is It Time For a Change?

If you have tried to make changes in any habit, you realize changes must come gradually to be the most successful. Quick change can lead to discouragement and failure when we take on too many tasks at once.

It is no different when it comes to changing recipes and the way we prepare food. "Easy does it" are words to remember. Before you plunge into making many home food preparation changes, think through the following questions.

Does this recipe need to be changed at all? Many recipes already may meet your nutritional goals. To make further changes in those recipes might alter their acceptance by you and your family.

How often do you use the recipe? Favorite recipes used only on special occasions do not always need changing. Their purpose is for celebration or to add a special touch to a meal. If you are concerned they will not fit into your nutritional goals when you do use them, cut down on serving size, instead.

On the other hand, certain recipes are family favorites and you prepare them frequently. It may help your nutritional goals to adjust recipes you will be eating several times in a month.

Will the recipe changes be acceptable to you and your family? Once you start making changes in recipes, you will find many changes are easy to accomplish. Family members and others may not even notice the changes.

Too many changes or extreme changes in a recipe can make the recipe unacceptable, or even unsafe, however. If that happens, back up a step. An unpleasing recipe will not serve your purpose for designing wholesome and enjoyable meals.

Do you or members of your family have specific dietary concerns? Recommendations for adjusting recipes discussed in this guide are for persons making changes to meet general nutrition recommendations. If you are following a specific diet for a medical condition or a chronic disease, please consult a registered dietitian for directions. You may have special needs that should be considered.

How to Adjust Recipes

Many recipes are adjustable by reducing an ingredient or substituting another ingredient. Changes made to an original recipe result in a different product. This new product may look different and may have a different texture and flavor. Adjust favorite recipes gradually to help family members accept the new product. With small changes your family may not know you altered the recipe!

Guidelines for adjusting salt, sugar, fat, and fiber in recipes follow:

Salt

In most recipes salt may be left out without affecting the final product in any way other than taste. Since salt gives flavor, gradual decreases are easier to accept. Begin by reducing the amount of salt in recipes by half. For example, if a recipe calls for 1/2 teaspoon salt, only add 1/4 teaspoon.

Salt may act as a flavor enhancer of other ingredients in the original recipe. If other spices and herbs are present in the recipe, increase them slightly when you reduce salt. If a recipe calls for 1 teaspoon each of salt and a spice, increase the spice to 1 1/4 teaspoon as you reduce or omit salt.

Be conservative when you increase spice and herb amounts. Whole spices provide more flavor with longer cooking while powdered spices lose their flavor with longer cooking times. As you experiment with herbs and spices and feel more comfortable with recipe adjustments, add spices and herbs not called for in the original recipe.

Salt is a necessary ingredient in yeast bread products to control the fermentation of yeast. Yeast dough made without

salt will rise rapidly, causing a poor texture. Avoid adjusting salt in yeast bread recipes.

In fermented types of pickles, salt is essential for proper acid development. Do not adjust salt in pickle recipes. The resulting product may have a poor texture. The safety of the product may be questionable. Several tested recipes are available for reduced sodium quick-pack (not fermented) pickles.

You also may use available salt substitutes in food products. Be careful because these substitutes may give a bitter flavor when used in products.

Sugar

Sugar can be successfully reduced in many recipes by one-fourth to one-third. If a recipe calls for 1 cup of sugar, reduce the amount to 3/4 cup or 2/3 cup. A product made with reduced sugar may be less sweet.

Besides providing a sweet flavor to food items, sugar has other functions. Reducing the sugar may affect these functions, also.

In baked items, such as breads, quick breads, cakes or cookies, sugar gives a moist, tender, browned product. Sugar causes cookies to spread during baking. In yeast breads, a small amount of sugar increases the fermentation rate. Larger amounts of sugar in yeast products such as rolls depress the yeast action. Reducing the sugar in baked products results in a lighter colored product that may be less tender. Cookies may not spread as much.

Sugar binds water. In pie fillings the liquid in fruit juices is "tied up" with sugar. Reducing sugar may result in a soggy crust. Drain fruits or reduce the amount of liquid to prevent a soggy crust.

When sugar binds water, the water is not available for disease-causing microorganisms to grow and multiply. Reducing sugar in high moisture foods requires careful handling and storage to prevent microbial contamination and growth. Refrigerate these items; avoid leaving them at room temperature for more than two hours.

In frozen desserts and ice cream, sugar lowers the freezing point. The original product will be softer at a given temperature when compared to its counterpart with less sugar. Sugar helps form a smooth texture in frozen food products. Cold temperatures mask the sweet flavor of frozen desserts and they do not taste as sweet when they are cold. Increase flavorings slightly to enhance the sweet flavor in reduced sugar frozen desserts.

Sugar crystallizes to provide proper consistency and texture in candies. It is not advisable to reduce the sugar in candy recipes. Encourage eating fewer or smaller pieces of candy instead.

In cooked and canned fruits, sugar helps retain the shape and preserve a firm texture and bright color. Excess sugar masks the natural flavor of fruits and may cause the fruits to shrink or shrivel.

Sugar acts as a preservative in jams, jellies and marmalade. Sugar, acid (fruit) and pectin must be in the right proportions to get a desirable jelled product. The high concentration of sugar inhibits food-borne pathogenic bacteria (although molds still may cause spoilage). For safety reasons, use recipes developed for reduced sugar preserves rather than adjusting your own recipes. Refrigerate reduced sugar preserves since the amount of sugar may not be enough to act as a preservative.

Substitute sweeteners are another alternative to replace sugar in some items. Several substitute sweeteners are commercially available. It is best to use recipes developed for sugar substitutes. Sugar Twin®, Sprinkle Sweet®, Equal®, Sweet One® and Sweet 10® are examples. Follow manufacturers' recommendations for use.

Aspartame (Equal®) breaks down if heated to high temperatures. When it breaks down, aspartame no longer imparts a sweet flavor to foods. Substitute Aspartame for sugar in recipes that do not require heating.

Using saccharine in hot and cold foods may leave a bitter after taste. Sugar substitutes do not provide the other functions that sugar does, i.e. browning, tenderness, moistness, smooth texture, crystallization, retention of shape and color, or as a preservative in jams and jellies.

Fat and Cholesterol

In many recipes, the total fat content can be reduced by one-third. If a recipe says 1 cup shortening, cut the amount to 2/3 cup. In other recipes, substitute some lower fat ingredients for higher fat ingredients.

Fat and Cholesterol Substitutions

If your recipe calls for:	*substitute:*
Sour Cream	Yogurt or cottage cheese
High fat cheese	Low fat cheese
Whole milk	2%, 1% or skim milk
Cream for whipping	Evaporated milk or whipped nonfat dry milk
Heavy cream (36-40% fat)	Light cream (18-20% fat) or Half-and-half cream
Buttermilk	Plain yogurt
Regular fat meats	Lean or extra lean meats

Trim visible fat on meat and poultry. Chill gravy, soups and stews until the fat solidifies on the top, and then lift off.

To change the type of fat in a recipe, from saturated to mono- or polyunsaturated fat, substitute fat from plant sources for a fat from animal sources. This substitution reduces the cholesterol content, also. Examples of this type of recipe adjustment are substituting a vegetable shortening for lard, or using margarine in place of butter.

Fat as an ingredient in foods provides several functions. Fat contributes to the texture and flavor of many products. Reducing the fat or changing the type of fat may result in a product that has different characteristics.

In baked items, fat gives a tender and moist product. Cakes adjusted for lower fat may only have a slight flavor change. Quick breads may be dry and less tender. Muffins have a tendency to tunnel more easily — go easy on mixing. Small reductions of fat in yeast breads will yield acceptable yeast bread products but they may not keep as long. Large adjustments in the amount of fat in yeast breads will decrease the loaf volume. In pastry products, fat is responsible for the flakiness and lightness of the product. A small reduction in fat may not produce a noticeable change in pastry products.

Sauces, gravies and mixed dishes (meatloaf, casseroles) will have a milder flavor when you reduce fat. Try spices and herbs, in small amounts at first, to add flavor. Fat separates the flour or corn starch used to thicken gravies or sauces and prevents lumping. If you remove all the fat, mix flour or corn starch with a cold liquid before adding to the hot liquid.

In candy and ice cream, fat is responsible for a smooth texture. Reducing fat in candy and frozen products results in a slightly coarser texture.

Only animal products contain cholesterol. Egg yolks are one of the richest cholesterol sources. To reduce the cholesterol content of a recipe, use 2 egg whites in place of 1 egg. In most recipes, egg whites can be successfully substituted for whole eggs. Eggs provide structure and tenderness to baked products. When beaten they are leavening agents. In salad dressings, puddings and custards, eggs are thickeners and emulsifiers. Egg substitutes such as Egg Beaters® and Egg Scramblers® can substitute for eggs in many recipes.

Fiber

Whole grain flours, fruits, vegetables, dry beans, dry peas, nuts and seeds add fiber to prepared foods.

Several whole grain flours are available such as whole wheat, graham, stone ground, rye, oat, barley, and corn. To increase fiber, whole grain flour can be substituted for one-fourth to one-half of white flour in recipes. For example, if recipes require 3 cups of all-purpose flour, use 1 1/2 cups all-purpose and 1 1/2 cups whole wheat flour.

The use of whole grain flour in a product will change the final flavor, appearance, and texture of the product. If your family is not familiar with the flavor of whole grain products, substitute only one-fourth of the white flour with a whole grain flour. Gradually increase the amount of whole grain flour as family members accept the new product.

In yeast breads, the large, sharp grain pieces in whole wheat flours interfere with gluten development during kneading and the ability of the bread to hold volume. The final loaf volume of whole grain breads will be less than white flour products. Whole grain products may have a drier texture because the large particles take longer to absorb moisture during mixing or kneading stages. The dough or batter of a whole grain product should be slightly sticky in comparison to its original counterpart. A 100 percent whole grain product produces a very heavy, compact, low volume product.

Dry beans and peas added to mixed dishes such as casseroles, soups and stews increase the fiber content. Nuts and seeds add fiber to products that contain them but they also add fat.

Fruits and vegetables contain fiber. In mixed dishes, increase vegetables or use them as substitutes for part of the meat or poultry ingredient.

Egg Substitutions

If your recipe calls for:	*substitute:*
Whole egg	• 1/4 cup egg substitute • 1 egg white plus 2 teaspoons vegetable oil • 2 egg whites • in cakes and cookies — 2 tablespoons water plus 1/2 teaspoon baking powder • in cake and cookie recipes that call for 2 or 3 eggs, for each egg, use: -2 tablespoons flour - 1/2 tablespoon shortening - 1/2 teaspoon baking powder - 2 tablespoons liquid (use liquid called for in recipe)
Egg yolk	•1 1/2 tablespoons egg substitute

Adjusted Recipes

Examples of adjusted recipes follow. The *Modified Creamy Cornstarch Pudding* has less salt, sugar, cholesterol and fat, and a change in the types of fat. *The Modified Perfect Biscuit* recipe has increased fiber, changes in types of fat and reduced salt. The goal of the *Modified Meatloaf* recipe was to reduce fat and salt content.

Creamy Cornstarch Pudding

Original	*Modified*
3 cups whole milk	3 cups skim milk
3/4 cup sugar	1/2 cup sugar
1/4 tsp salt	(omit salt)
6 tbls cornstarch	6 tbls cornstarch
3 egg yolks	6 tbls egg substitute
3 tbls butter	3 tbls light margarine
1 1/2 tsp vanilla	1 1/2 tsp vanilla

Blend cornstarch, sugar, and salt (omitted in the modified recipe) in 3 quart saucepan. Add milk in portions; stir after each addition until mixture is free of lumps. Place saucepan over medium heat and stir constantly; bring to a boil and boil 1 minute; remove from heat. Place egg yolk (egg substitute) in small bowl; blend with a fork. Add 3 tbls of hot starch mixture to egg yolk (egg substitute); blend thoroughly. Repeat 3 times. Pour egg-starch mixture into remaining starch paste. Blend thoroughly. Place saucepan over medium heat; stir constantly and heat egg-starch mixture for 3 to 4 minutes or until it loses its glossy look. Don't let mixture boil. Stir in butter and vanilla. Stir until mixture is well blended. Pour into 8 serving dishes and refrigerate (1/2 cup per serving).

Nutritional content of Creamy Cornstarch Pudding

	Original	*Modified*
Calories/ serving	219 Cal	135 Cal
Total fat	9.8 g	2.9 g
Calories from fat	40%	19%
Saturated fat	5.5 g	0.7 g
Monounsaturated	3.1 g	1.2 g
Polyunsaturated	4.6 g	0.8 g
Cholesterol	128 mg	1.5 mg
Sodium	167 mg	110 mg

Perfect Biscuits

Original	*Modified*
2 cups all-purpose flour	1 cup all-purpose flour
	1 cup whole wheat flour
1/2 tsp salt	(omit salt)
4 tsp baking powder	4 tsp baking powder
1/2 tsp cream of tartar	1/2 tsp cream of tartar
2 tsp honey	2 tsp honey
1 stick butter	1 stick margarine
2/3 cup whole milk	2/3 cup skim milk

Sift dry ingredients together, cut in shortening. Mix milk and honey, add to other ingredients and knead lightly. Roll or pat to 3/4 inch thickness and cut. Place on a greased baking sheet and bake for 10-15 minutes at 450°F. Yield: 8 (2 1/2 inch) biscuits.

Nutritional content of Perfect Biscuits

	Original	*Modified*
Calories/ serving	230 Cal	216 Cal
Total fat	13.3 g	11.8 g
Calories from fat	52%	49%
Saturated fat	8.0 g	2.3 g
Monounsaturated	3.8 g	5.5 g
Polyunsaturated	0.6 g	3.8 g
Cholesterol	35.8 g	0.3 mg
Dietary Fiber	0.8 g	2.0 g
Sodium	820 mg	676 mg

Meatloaf

Original	*Modified*
1 1/2 lbs regular ground beef	1 1/2 lbs ground turkey (or 90% lean beef)
1/3 cup whole milk	1/3 cup skim milk
2 cups white rice, uncooked	2 cups brown rice, uncooked
2 eggs	2 egg whites
6 oz American cheese	6 oz mozzarella cheese (part skim)
1/4 tsp pepper	1/4 tsp pepper
1/4 cup grated onion	1/4 cup grated onion
1/2 tsp garlic salt	1/2 tsp garlic powder
1/2 cup catsup	1/2 cup tomato paste or low sodium catsup

Combine eggs (egg whites), milk, garlic salt (powder), pepper, onion, rice and meat (poultry). Mix ingredients thoroughly, then press roughly 1/2 of the mixture into a greased standard loaf pan. Place cheese on the meat mixture, then spread remaining meat (poultry) mixture over the cheese, making sure the cheese is completely covered. Spoon catsup (tomato paste) over the loaf and bake at 350°F for 50 minutes. Serves 8.

Nutritional content of Meatloaf

	Original	*Modified*
Calories/ Serving	435 Cal	280 Cal
Total Fat	26 g	8.4 g
Calories from Fat	54%	27%
Saturated Fat	11.8 g	3.9 g
Monounsaturated	10.3 g	2.1 g
Polyunsaturated	1.2 g	1.5 g
Cholesterol	165 g	76.9 mg
Dietary Fiber	0.4 g	1.0 g
Sodium	853 mg	438 mg

Credit is given to the following Nutritional Science and Hospitality Management students for the recipe modifications: Kathryn Barclay, Gretchen Becker, Julie Florell, Delores Shaffer, Amy Vervaecke, Marty Glenn and Michael Wanetka.

Resources

Altering Recipes for Health. Cooperative Extension Service. Iowa State University. PM-1064. May 1984.

Food for Health. Revitalize Your Recipes for Better Health. Cornell Cooperative Extension, Cornell University. DNS Fact Sheet 2. April 1988

Nutrition and Your Health: Dietary Guidelines for Americans. U.S. Departments of Agriculture and Health and Human Services, Home and Garden Bulletin 232. 2d ed. 1985.

Preparing Foods & Planning Menus Using the Dietary Guidelines. U.S. Department of Agriculture, Home and Garden Bulletin 232-8. U.S. Government Printing Office, Washington, D.C.

Recommended Dietary Allowances, 10th ed. Food and Nutrition Board, National Research Council. National Academy Press, Washington, DC. 1989.