

VITAMINS A & C FROM FRUITS & VEGETABLES

Nutrient	Function	Food/Product
Vitamin A	Promotes good vision	Gerber® 1st FOODS • Apple Carrot Juice • Sweet Potatoes • Carrots • Peaches
		Gerber® 2nd FOODS • Applesauce Apricot • Prunes with Apples • Garden Vegetables • Mixed Vegetables • Squash • Broccoli & Carrots with Cheese • Apricots with Mixed Fruit • Creamed Spinach • Green Beans • Peas • Fruit Salad
		Gerber® 3rd FOODS • Carrot Dices • Mixed Veggie Dices
Vitamin C	Helps maintain healthy skin and gum	Gerber® 100% Juices Gerber® 1st FOODS Fruits, 2nd FOODS Fruits, 3rd FOODS Fruits* Gerber® Jarred Cereal Gerber® Tender Harvest™ • Apple Mango Kiwi • Banana Blueberry • Pear & Wild Blueberry • Apple Sweet Potato • Spring Garden Vegetables • Pears & Winter Squash
		Increases iron bioavailability

*Except prune and plum varieties

PHYTONUTRIENTS FROM FRUITS & VEGETABLES

Nutrient	Color	Food
Beta-carotene	Orange/yellow	• Apricots • Mangoes • Carrots • Sweet potatoes • Cantaloupe • Papaya • Pumpkins • Winter squash • Kiwifruit • Broccoli • Spinach
Lutein	Green/yellow	• Kiwifruit • Broccoli • Spinach
Lycopene	Red	• Pink grapefruit • Watermelon • Tomatoes
Zeaxanthin	Yellow/green	• Corn • Spinach • Winter squash
Anthocyanins	Red/purple	• Blueberries • Strawberries • Cherries • Plums
Quercetin	White/green	• Apples • Red grapes • Cherries • Broccoli • Pears • Onions
Hesperidin		• Grapefruits • Pink grapefruit • Limes • Tangerines • Oranges
Phenolic Compounds		• Berries • Red grape juice • Apple juice • Prunes • Kiwifruit • Tomatoes • Red grapes • Apples

Fruits and vegetables are two distinct food groups in the USDA pyramid, but for young children, it is more appropriate to think of them together, since they provide many of the same nutrients. For example, if a young child does not like oranges, broccoli would be a good substitute since they are both excellent sources of vitamin C.

Fruits and vegetables are also known to contain phytonutrients, compounds found in plant foods that appear to work with essential nutrients to promote health and protect against disease. Although their exact role in promoting health is uncertain at this time, early research suggests that phytonutrients may help protect against some cancers, heart disease, and other chronic health conditions.¹⁷ Phytonutrients include hundreds of naturally occurring substances, including carotenoids and flavonoids. Until scientific research learns more, including a wide variety of fruits and vegetables in young children's diets is recommended to ensure they receive adequate levels of these important components for health.

For more information about the nutrition and health benefits of fruits and vegetables visit www.Sadag.com, www.usda.gov and www.gerber.com.

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THE HEALTH BENEFITS OF EATING APPLES

"An apple a day keeps the doctor away" still rings true as scientific evidence mounts indicating that eating—or drinking—an apple a day helps build a foundation for good health from infancy through adulthood. The beneficial effects are derived whether the apples are consumed whole or as juice or applesauce. Current research has focused on:

- **Phenolic compounds** found in both whole apples and apple juice may act as antioxidants against LDL (low-density lipoproteins), aiding in the reduction of blood cholesterol levels.
- **Flavonoids** are antioxidants that extend the action of vitamin C. The protective effect of flavonoids has been associated with diets high in apple intake.
- **Pectin** has been shown to lower blood cholesterol levels. Apples are an excellent source of pectin, providing 780 milligrams per 100 grams of edible fruit.

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CHILDREN UNDER TWO NEED

Five A Day

Older babies and toddlers who routinely consume fruits and vegetables in a wide variety of flavors, colors, shapes, and textures are establishing a foundation for lifelong healthy eating habits.

Children indeed learn what they live. Therefore, parents need to be sure that the entire family—not just their babies—follows the 5 A Day eating pattern.

Many dietary recommendations meant for adults—reduce fat intake, increase fiber intake—are actually contrary to recommendations for infants. Infants need a concentrated source of calories (i.e. fat) that efficiently fuels the rapid growth of infancy.¹ With the exception of treating acute constipation, a high-fiber, low calorie diet is not recommended during the first two years of life.

One dietary recommendation, however, has universal application across the age spectrum—Eat 5 A Day for Better Health.* The 5 A Day Program approaches Americans with a simple, positive message: Eat 5 or more servings of fruits and vegetables a day for better health.² With slight modification, applying this nutrition approach right from the start can help older infants and young children establish healthy eating patterns that provide nutrition benefits today, as well as long-term health benefits later in life.

WHY 5 A DAY FROM THE START?

The goal of infant nutrition during the first two years of life is to provide developmentally appropriate, nutritious mealtime experiences, so that an infant can:

- Achieve normal growth and development
- Learn to accept and enjoy a variety of nutritious foods, and
- Make a smooth transition from dependent to independent eating.³

This goal is best met by slowly building from an all-milk diet during early infancy to one that includes a variety of nutritious foods with varying flavors and textures.

As infant growth slows during the second year of life, the need for energy-dense foods decreases and complex carbohydrates increases. The addition of fruits and vegetables helps bring balance to the older infant's diet. It takes time, however, for



*Sponsored by The Produce for Better Health Foundation, the National Cancer Institute, and the expanded 5 A Day Partnership. 5 A Day for Better Health was developed from the USDA Food Guide Pyramid, the foundation for healthy eating.

infants to learn to accept and enjoy these novel flavors and textures.⁴

Modifying the 5 A Day message to refer to 5 “tastes” a day (rather than 5 servings a day) provides parents with much-needed guidance as they introduce their children to fruits and vegetables in a wide variety of flavors, colors, shapes and textures.

Starting the 5 A Day eating pattern early in childhood also has implications for long-term health. Research has shown that developing the habit of eating generous amounts of fruits and vegetables early in life is a significant positive

predictor of fruit and vegetable intake later in life.⁵ Maintaining this healthy eating pattern throughout life will lead to improved overall health and reduced risk of diseases such as cancer, coronary heart disease, stroke, chronic obstructive lung disease, and diabetes.

DEVELOPMENT OF FOOD AND FLAVOR PREFERENCES BEFORE 2 YEARS OF AGE

The nursing period marks the beginning of the breast-fed infants journey into dietary variety, as the flavors of some foods are transferred from the mother's diet through her breast milk. As with all omnivores, infants possess an innate aversion to novel foods, particularly bitter tasting foods, which are perceived as harmful. It is speculated that experiences with the varied flavors of mother's milk may make breast-feeding infants more accepting of novel foods or new flavors when the time comes to introduce supplemental foods.⁶

There is also emerging evidence that a mother's diet during pregnancy leads to exposure to flavors in the womb that may enhance food preferences and acceptance patterns.⁷ These findings suggest that a mother's own preferences may influence her child's preferences for particular foods and flavors after birth.

TRENDS IN FRUIT & VEGETABLE CONSUMPTION

- About 60% of babies under 1 years old consume fruits daily and 47% consume vegetables. These percentages rise to around 80% for both fruits and vegetables for toddlers between 1–2 years of age.
- About 60% of 2–3 year olds consume the minimum recommendation of fruits each day. Only about 20% of children 2–5 years and 6–11 years consume the minimum recommendation of vegetables.
- For 4–5 year olds, consumption of the minimum fruit recommendation decreases to about 37%.
- By 12 years of age, the percentage of children consuming apples decreases from 22 to 8% and bananas decreases from 17 to 5%.
- Tomatoes and potatoes are by far the most commonly consumed vegetables from 3 years of age through adulthood.

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According to Leann Birch, Ph.D., a researcher at Pennsylvania State University's College of Health and Human Development, infants' preferences for novel foods and flavors can be shaped by their experience with them. Birch showed that repeated exposure to green beans and peas in the form of baby food helps infants overcome their initial rejection of these vegetables.⁸

Research also has shown that experiences with a variety of flavors early in life enhance the acceptance of solid foods, including fruits and

vegetables. Dr. Julie Mennella and colleagues at the Monell Chemical Senses Center found that exposure to a variety of flavors enhances an infant's acceptance of new foods.⁸ For example, offering a variety of fruit and vegetables aids the acceptance of carrots.

Applying the 5 A Day approach early in children's development may help build the foundation for a preference for fruits and vegetables in later childhood and beyond.

ARE CHILDREN TODAY MEETING THE 5 A DAY GOAL?

A majority of children and adolescents are not meeting the recommendations to consume five or more servings of fruits and vegetables a day. Food and nutrient consumption data from the USDA Continuing Survey of Food Intakes by Individuals (CSFII 1996) showed that only one in five children consumed five or more servings of fruits and vegetables per day.⁹ Nearly one quarter of all vegetables consumed by children and adolescents were French fries. Their intakes of all fruits and of dark green and/or deep yellow vegetables were very low compared to recommendations.

In a study by Dennison, preschool-aged children consumed, on average, about 80% of the

recommended fruit servings/day, but only 25% of the recommended vegetable servings each day.¹⁰ Low intakes of fruits and vegetables were associated with inadequate intakes of vitamin A, vitamin C, and dietary fiber.

More recent government food and nutrient data from USDA Continuing Survey of Food Intakes by Individuals (CSFII 1994-96, 1998 released October 2000) confirm that a majority of adults and children 2 years and older are not meeting the 5 a day minimum servings of fruits and vegetables.¹¹ Instilling the 5 A Day habit in children before 2 years of age may help increase the percentage of older children and adolescents achieving the recommended daily servings of fruits and vegetables.

HOW TO INTRODUCE 5 A DAY FROM THE START

During the transition from an all-milk diet to one that includes a variety of solid foods, the 5 A Day principle acts as a guide for parents introducing their infants to fruits and vegetables. Initially, “5 A Day” would pertain to the infant's repeated exposure to novel fruits and vegetables during the gradual introduction of solid foods, i.e., 5-Tastes-A-Day.

Parents can begin by introducing Gerber® 1ST FOODS fruits and vegetables one variety at a time, with a new food added every three to five days. These single-ingredient, puréed fruits and vegetables are designed to help infants learn to eat from a spoon and explore new tastes.

Parents can use familiarity to improve their infant's acceptance of these new flavors. For example, the novel flavor of applesauce can be introduced along with a spoon of familiar rice cereal. Later, novel puréed peas can be introduced with now familiar applesauce. Offering several feeding opportunities with a new food over several days will give an infant time to become familiar with a new food and improve the food's eventual acceptance.

If after several attempts an infant does not overcome the initial resistance to a food, then parents need to respect their child's personal preference. No one food is going to “make or break” their infant's diet. Similarly, parents should not let their own personal preferences limit the food choices they offer their children.

Respecting their infant's preferences will help maintain a positive parent-child feeding partnership, as their baby learns to accept and enjoy a wide variety of other fruits and vegetables.

By the time an infant is consuming one-third of calories from foods other than breast milk or infant formula, the percent of calories from carbohydrates such as fruits and vegetables will increase from 42% to 52%.¹² An infant who can easily eat from a spoon, is ready to start smooth-textured Gerber® 2ND FOODS. In addition to familiar favorites, these larger serving size fruits and vegetables introduce new flavors in both single and mixed-ingredient varieties.

By one year of age, milk consumption decreases substantially and fruits, vegetables and grains comprise a significant portion of the infant's diet. Servings from fruits and vegetables increase to approximately equal those from cereals and grains. Gerber® 3RD FOODS fruits and vegetables can be introduced to older infants who are ready to explore even more tastes and combinations. These purées contain small pieces that are developmentally appropriate for infants learning to chew and mash foods.

Infants ready for independent self-feeding can practice their skills with Gerber® Graduates™ Fruit and Vegetable Dices and Finger Snacks. As hand skills improve, Graduates main dishes become ideal for toddlers exploring self-feeding with a spoon. Nutritionally, Gerber® Graduates provide the protein, iron and calcium needed to support toddler growth and development, without the added sugar and salt found in similar adult food products.

Over the course of the second year, the 5 A Day pattern takes on the traditional meaning, becoming a guide for parents in terms of both number of portions and the varieties of fruits/vegetables they serve their child each day.

It's important to emphasize that 5 A Day is a goal. This is not the time to force a child who is not interested. Repetition and exposure during positive mealtime experiences will be key to a food's eventual acceptance.

SERVING SIZES FOR CHILDREN UNDER 2 YEARS

According to the American Dietetic Association Manual of Clinical Dietetics, a rule of thumb for a young child's serving size is ¼–½ of an adult serving. However, an initial infant serving of a fruit or vegetable can be as small as 1 to 2 table-spoons.

It is important to let the child's appetite drive the amount eaten at a given meal, not the size of the jar the food came in. The parent's responsibility is to provide a variety of nutritious food choices at every meal. It is the child's responsibility to decide what and how much of that offering will be eaten.¹³

WHAT ABOUT FRUIT AND VEGETABLE JUICES?

The American Academy of Pediatrics (AAP) guidelines recommend introducing 100% juice after six months of age.¹⁴ USDA recommends introducing juice at 4–6 months as the first exposure to fruit.¹⁵ Both the AAP and USDA caution against offering juice in a bottle, recommending instead that juice be served only from a cup. As with solid fruits and vegetables, juices should be introduced with a single-ingredient at a time, beginning with one ounce and gradually increasing to a full four-ounce serving.

For fruit juice, the American Academy of Pediatrics recommends a child 1–6 years old limit their intake to 4–6 ounces each day.¹⁶ This translates as one of the 5 servings of fruit or vegetables a day. The AAP wants parents to know that 100% fruit juice can be a healthy part of a child's diet, if it is provided in appropriate amounts.

Gerber® 100% juices offer a convenient way to add fruits and vegetables to an infant's diet. Gerber's single-serving, four-ounce juice bottles are sized in line with the latest AAP guidelines. All Gerber® juices contain 100% of the day's vitamin C and 100% juices have no added sugar.

ESSENTIAL NUTRIENTS AND PHYTONUTRIENTS PROVIDED BY 5 A DAY

Fruits and vegetables provide essential nutrients, such as vitamin A, as beta carotene, and vitamin C, as well as carbohydrates, fiber and essential minerals.¹⁷ Specifically, fruit supplies vitamin A and C, potassium, and other minerals to keep skin, eyes, and gums healthy. Fruit also supplies carbohydrates and fiber. Vegetables provide vitamins A and C, complex carbohydrates, and fiber. They also supply significant amounts of some B vitamins, potassium, calcium, and other minerals. Offering different kinds or combinations of fruits and vegetables helps young children learn to enjoy a wide variety of these foods while deriving healthful nutrition benefits.



To ensure daily dietary variety, parents can plan a given day's fruit and vegetable offering based on the color spectrum, selecting different colors of fruits and vegetables throughout the day.

