



# IS FRUIT JUICE DANGEROUS FOR CHILDREN?

INSIGHT 1

From the USDA Center for Nutrition Policy and Promotion

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## Is Fruit Juice Consumption Dangerous for Children?

Controversy arose recently about fruit juice in the diets of children. Dennison et al. in an article appearing in *Pediatrics* 99(1):15-22 suggested that "excessive" fruit juice consumption—defined as 12 oz or more fruit juice daily—by children could be linked to childhood obesity or even growth stunting. The authors cautioned caregivers to avoid giving children fruit juice at such "excessive" levels. Such nontraditional advice created much interest and some alarm in the media and among consumers. Within days, many of the networks and major newspapers carried the story.

### Building on the U.S. Food Guidance System

The Center for Nutrition Policy and Promotion serves as the focal point within the U.S. Department of Agriculture for linking nutrition research to the American public. It accomplishes this mission by assisting in the development of the Federal nutrition guidance system along with other Federal agencies and taking leadership in interpreting it for consumers and health professionals. Comprised of nutritionists, economists, food scientists and other analysts, the Center is uniquely positioned to analyze national food consumption data sets, translate food intake into nutrient intake, interpret nutrition research and assess the quality of diets of the American public, in general, and those of specific subgroups such as children, in particular.

The *Dietary Guidelines for Americans* and the *Food Guide Pyramid* represent important components of the U.S. food and nutrition guidance system. The *Dietary Guidelines for Americans* provide nutrition guidance for healthy Americans from the age of 2 years through adulthood. The *Food Guide Pyramid* helps consumers implement the Dietary Guidelines by suggesting both the types of food needed and the number of servings. Servings numbers are based on an individual's energy needs.

## Importance of the Fruit Group

The fruit group is one of the five major food groups in the *Food Guide Pyramid*. For many children, it is one of the food groups that is not adequately consumed. A recent study found that over 40 percent of 2- to 5-year-olds consumed less than 1 serving of fruit per day. For children, the Guide recommends from 2-4 fruit servings per day, depending on the level of calories consumed. Children consuming a 1600 calorie diet should have 2 fruit servings per day, while 4 servings are recommended in a 2800 calorie diet. Children should generally consume about 2 fruit servings per day (6 oz of fruit juice equals 1 serving, as does 1 medium fruit).

### Three Nutrition Insights

To investigate the results of the Dennison *Pediatrics* study, nutritionists at the Center for Nutrition Policy and Promotion addressed the following three questions:

#### 1. Is there any link between fruit juice consumption and obesity or short stature?

Table 1 shows no relationship between fruit juice consumption of 12 or more ounces per day (over 2 days) and Body Mass Index (a ratio of weight to height—used as measure of obesity) or height. According to USDA's 1994 Continuing Survey of Food Intakes by Individuals (CSFII), children drinking more fruit juice were actually slightly taller with slightly lower BMI's. The 1994 CSFII is a

**Table 1. Height and BMI by level of fruit juice intake**

Age and fruit juice intake	Height (inches)	BMI
2-3 years		
<12 oz (393 children)	35.2	19.8
≥12 oz (48 children)	35.6	19.7
4-5 years		
<12 oz (359 children)	41.7	17.3
≥12 oz (30 children)	41.9	16.8

Source: U.S. Department of Agriculture. 1996. *Continuing Survey of Food Intakes by Individuals, 1994.*

nationally representative sample of about 5,500 individuals. There were 441 children age 2 to 3 years and 389 children 4 to 5 years in USDA's national survey compared with 94 2-year-olds and 74 5-year-olds in Dennison's study of children in central New York. There were 48 2- to 3-year-olds and 30 4- to 5-year-olds in the USDA sample who reported 12 oz or more daily for 2 days compared with 15 2-year-olds and 4 5-year-olds in Dennison's study (over 7 days of intake).

## 2. How much fruit juice do 2- to 5-year-old children consume?

Children 2- to 3-years-old averaged 5.1 oz per day of fruit juice, while children 4- to 5-years-old averaged 3.5 oz. About 10 percent of 2- to 3-year-olds and 8 percent of 4- to 5-year-olds averaged 12 or more ounces of fruit juice per day over the 2 days of the CSFII study conducted by USDA in 1994.

**Table 2. Fruit juice consumption of children 2- to 5-years-old, per day for 2 days, 1994**

Age	Number of children	Total fruit juice (oz)	Citrus juice (oz)	Other fruit (oz)	Children drinking 12 fl oz fruit juice or more per day (%)
2-3 years	441	5.1	1.5	3.5	9.9
4-5 years	389	3.5	1.5	2.0	8.4

Source: U.S. Department of Agriculture. 1996. *Continuing Survey of Food Intakes by Individuals, 1994*.

## 3. What nutritional role does fruit juice play in the diets of children?

Fruit juices are important sources of nutrients such as vitamin C, folate, and potassium, and are naturally low in fat and sodium. For example (Table 3), fruit juices supplied 37.5 percent of vitamin C intake for 2- to 3-year-olds and 30.9 percent of vitamin C for 4- to 5-year-olds. The contribution of fruit juices to folate and potassium intakes was lower (about 7 to 12 percent) than for vitamin C but still higher than the calories supplied by fruit juices (about 3 to 5 percent). Table 4 indicates that children consuming higher levels of fruit juice tend to consume higher levels of milk and lower levels of fruit drinks and soft drinks. Therefore, fruit juice appears to be a substitute for beverages such as soft drinks and fruit drinks but not for milk in the diets of children.

**Table 3. Contribution of fruit juices to nutrient intake**

Age and nutrient	Average intake—All foods	Average intake—Fruit juices	Percent from fruit juices
<b>2-3 years</b>			
Energy (kcal)	1,386	74.8	5.4
Vitamin C (mg)	91.4	34.3	37.5
Folate (µg)	194	15.6	8.0
Potassium (mg)	1,872	216.3	11.6
<b>4-5 years</b>			
Energy (kcal)	1,603	50.2	3.1
Vitamin C (mg)	91.3	28.2	30.9
Folate (µg)	212	14.1	6.7
Potassium (mg)	2,033	157.3	7.7

Source: U.S. Department of Agriculture. 1996. *Continuing Survey of Food Intakes by Individuals, 1994*.

**Table 4. Other beverage intake by level of fruit juice intake**

Age and fruit juice intake	Fluid milk (oz)	Fruit drinks <sup>1,2</sup> (oz)	Soft drinks <sup>1</sup> (oz)
<b>2-3 years</b>			
<12 oz	10.1	3.2	2.5
≥12 oz	11.4	2.7	1.3
<b>4-5 years</b>			
<12 oz	10.4	4.1	3.4
≥12 oz	10.3	2.2	2.8

<sup>1</sup> Excludes diet beverages.

<sup>2</sup> Less than 100 percent fruit juice.

Source: U.S. Department of Agriculture. 1996. *Continuing Survey of Food Intakes by Individuals, 1994*.

## Conclusion

Fruit juice consumption in quantities recommended in the *Dietary Guidelines for Americans* is advantageous for healthy children. Parents should continue to follow the scientifically sound and comprehensive dietary advice contained in the *Dietary Guidelines for Americans* and the *Food Guide Pyramid*.

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## Nutrition



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