

# From Farm to Table: Nutrient Losses in Fruits and Vegetables

## Insight From Mannatech's R&D Department

### Fruits and Vegetables Are Important for Good Health

Fruits and vegetables are valuable sources of vitamins, minerals, fiber and phytonutrients. Studies have documented numerous health benefits associated with eating fruits and vegetables, with the greatest benefits seen in people who consume more than the recommended daily amounts.<sup>1</sup>

Most Americans do not eat enough fruits and vegetables. The USDA recommends 5 to 13 servings daily as a part of a healthy diet,<sup>2</sup> but only 11% of adults meet these guidelines.<sup>3</sup> Surprisingly, 25% of adults do not eat any vegetables and 50% do not eat any fruits on a daily basis!<sup>3</sup>

### Nutrient Levels in Fresh Fruits and Vegetables Are Declining

Four recent studies reported that today's fresh fruits and vegetables are lower in certain vitamins and minerals than they were as little as 50 years ago. These studies compared nutrient data from as early as 1930<sup>4</sup> to as recent as 1999<sup>5,6</sup> for the U.S.,<sup>6</sup> the U.K.<sup>4,5</sup> and Canada.<sup>5</sup> No matter the country nor the timeframe studied, the results are strikingly similar: the vitamin and mineral content of fruits and vegetables is decreasing.<sup>4-7</sup> For example, two peaches would have supplied a woman's vitamin A RDA in 1951. Today, she would have to eat almost 53 peaches to meet this requirement!<sup>5</sup>



Why are these nutrient losses occurring? Many factors could be involved, including plant breeding practices that select for high yield and cosmetic appeal, storage and ripening systems and reliance on chemical fertilizers.<sup>4,6</sup>

### Cooking and Processing Can Deplete Fruits and Vegetables of Nutrients

What happens to vitamins and minerals when fruits and vegetables are boiled or canned? Vitamin C losses are extreme (Figure A). When 13 fruits and vegetables are canned, amounts of 9 nutrients are reduced by greater than 50%, with nearly complete loss of vitamin E, or tocopherols (Figure B).<sup>8</sup>

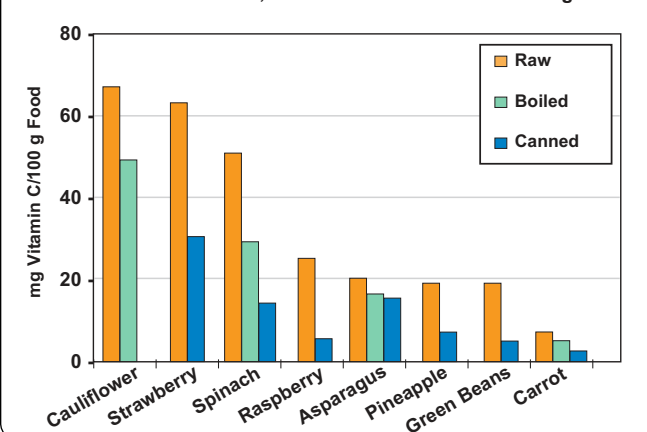
#### Summary

Fruit and vegetable consumption is vitally important to sustain health. Most people are not eating enough of these foods, which contain lower amounts of vitamins and minerals today compared to 50 years ago. Dietary supplementation is thus appropriate for most people.

#### REFERENCES

- Hyson D. *The Health Benefits of Fruits and Vegetables: A Scientific Overview for Health Professionals*. Wilmington, DE: Produce for Better Health Foundation, 2002.
- U.S. Department of Health and Human Services and U.S. Department of Agriculture. *Dietary Guidelines for Americans*, 2005, 6th Edition, Washington DC: U.S. Government Printing Office, 2005.
- Casagrande SS, Wang Y, Anderson C, et al. Have Americans increased their fruit and vegetable intake? The trends between 1988 and 2002. *Am J Prev Med* 2007;32(4): 257-63.
- Mayer A-M. Historical changes in the mineral content of fruits and vegetables. *Brit Food J* 1997; 96(6):207-11.
- Christian J. Charts: Nutrient changes in vegetables and fruits, 1951 to 1999. CTV.ca News 2002.
- Davis DR, Epp MD, Riordan HD. Changes in USDA Food Composition for 43 Garden Crops, 1950 to 1999. *J Am C Nutr* 2004; 23(6):669-82.
- Thomas D. A study on the mineral depletion of the foods available to us as a nation over the period 1940 to 1991. *Nutr Health* 2003;17(2):85-115.
- Souci SW, Fachmann W, Kraut H. *Food Composition and Nutrition Tables*. 6th Edition, Boca Raton, FL: CRC Press, 2000.

**Figure A**  
Amount of Vitamin C in Raw, Boiled and Canned Fruits and Vegetables<sup>8</sup>



**Figure B**  
Average Percent Loss of Reported Vitamins and Minerals When Fruits and Vegetables Are Canned<sup>8</sup>

