

The Role of Nutrition in Boosting the Immune System

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A Lifetime of Nourishment

- Chosen foods have a cumulative effect
 - Good health and poor health
- Your body continuously renews itself
- Best foods
 - Support your body's growth and maintenance
- Malnutrition
 - Deficiencies, imbalances, and excesses

The Diet and Health Connection

- Influential lifestyle habits
 - Tobacco and alcohol use
 - Nutritional choices
- Chronic diseases
 - Linked to poor diet

Table 1-1

Leading Causes of Death in the United States

	Percentage of Total Deaths
1. Heart disease	23.7
2. Cancers	22.9
3. Chronic lung diseases	5.7
4. Strokes	5.1
5. Accidents	4.9
6. Alzheimer's disease	3.4
7. Diabetes mellitus	2.9
8. Pneumonia and influenza	2.1
9. Kidney disease	1.8
10. Suicide	1.5

Note: The diseases highlighted in bold have relationships with diet.

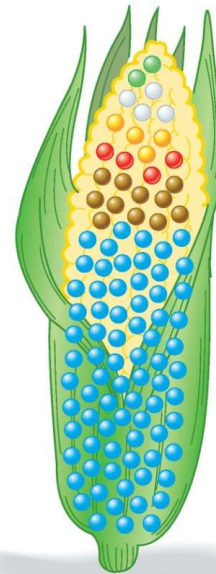
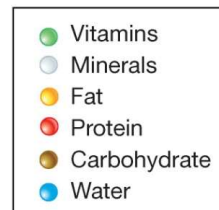
Source: J. Xu and coauthors, *Mortality in the United States, 2012*, NCHS Data Brief 168, October 2014.

The Human Body and Its Food

- Energy body uses comes indirectly from the sun
 - Eating plant-derived foods
 - Eating animals that eat plants
- Body requires six types of nutrients
 - Four are organic (contain carbon)

Meet the Nutrients

- Human body and food
 - Same materials
 - Arranged differently





**EAT THE
RAINBOW!**

WIN!

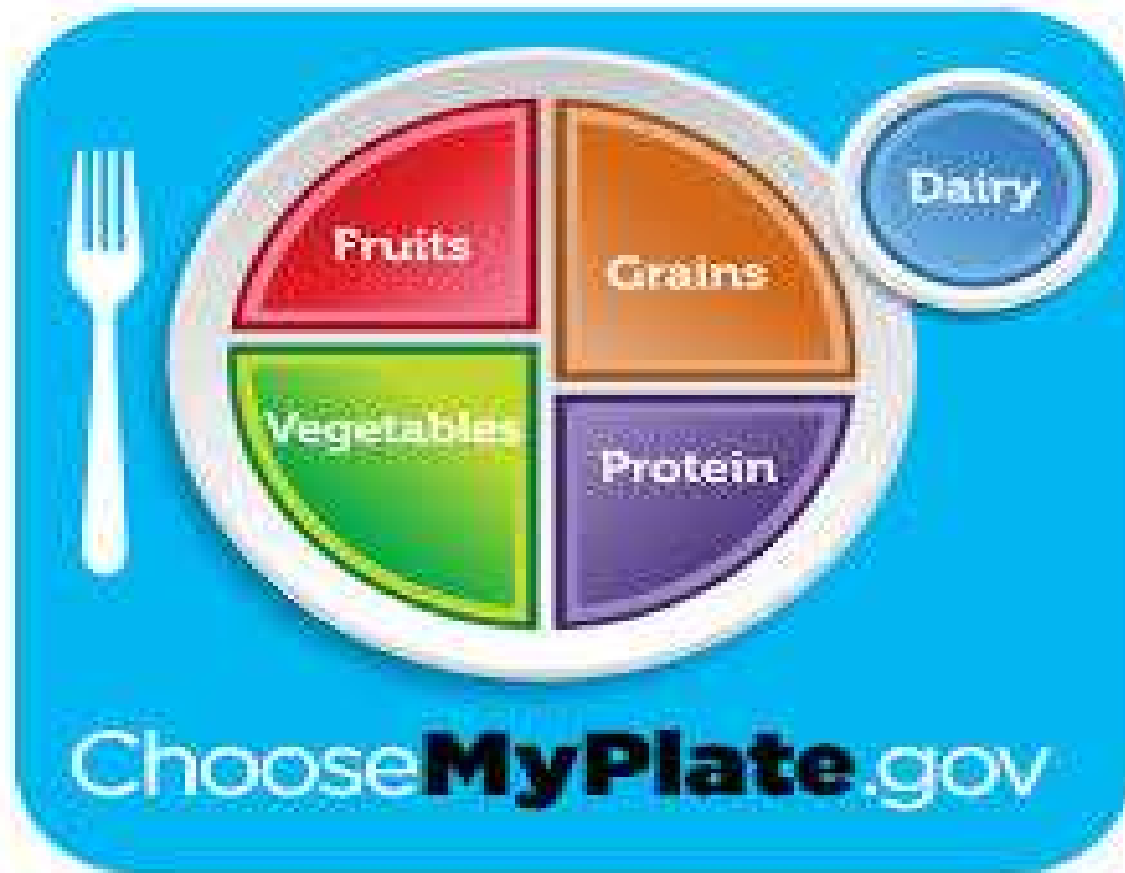
Your fate is on your plate

www.winwellness.org

Nature's Skittles

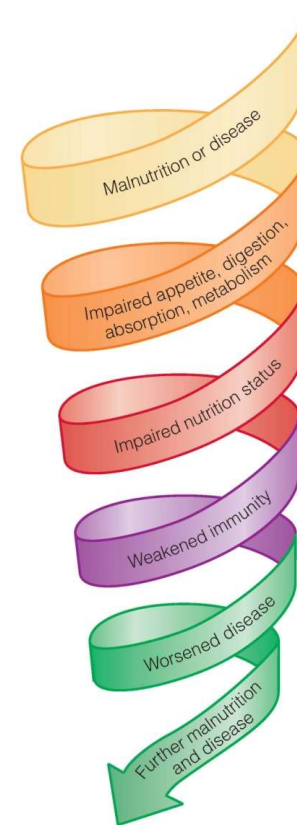


Balanced Plate



The Immune System, Nutrition, and Diseases

- Deficiencies
- Effects of malnutrition
 - At-risk groups
 - Worsens disease
 - Impaired immunity
 - Disease can worsen malnutrition



Selected Nutrient Roles in Immune Function

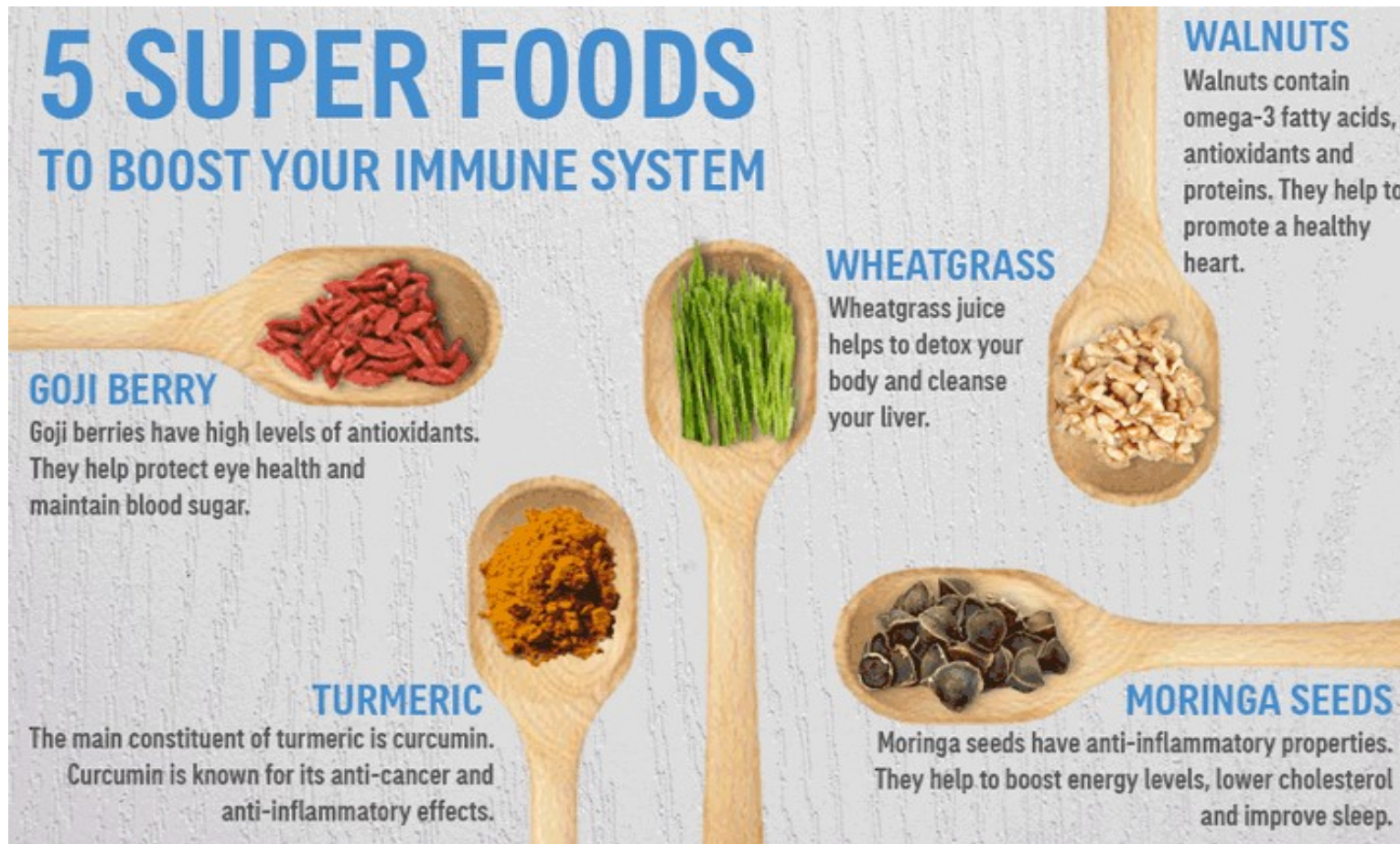
Nutrient	Key Role(s) in Immune Function
Vitamin A	Maintains healthy skin and other epithelial tissues (barriers to infection); role in cellular replication and specialization that supports immune cell and antibody production and the anti-inflammatory response
Vitamin D	Regulates immune cell (T-cell) responses; role in antibody production
Vitamins C and E	Protect against oxidative damage
Vitamin B ₆	Helps maintain an effective immune response; role in antibody production
Vitamin B ₁₂ and folic acid	Assist in cellular replication and specialization that support immune cell and antibody production
Selenium	Protects against oxidative damage
Zinc	Helps maintain an effective immune response; role in antibody production
Protein	Maintains healthy skin and other epithelial tissues (barriers to infection); participates in the synthesis and function of the organs and cells of the immune system and antibody production
Omega-3 fatty acids	Help to resolve inflammation after an immune response through production of lipid mediators, among other roles

Sources: P. C. Calder, *Feeding the immune system*, Proceedings of the Nutrition Society 72 (2013): 299–309; B. H. Maskrey and coauthors, *Emerging importance of omega-3 fatty acids in the innate immune response: Molecular mechanisms and lipidomic strategies for their analysis*, Molecular Nutrition and Food Research 57 (2013): 1390–1400; S. S. Percival, *Nutrition and immunity: Balancing diet and immune function*, Nutrition Today 46 (2011): 12–17.

Immune-Boosting Superfoods



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Immune-Boosting Superfoods



Foods & Drinks that Compromise the Immune System

- Soda
 - Processed foods
 - Foods and drinks high in sugar
 - Refined carbohydrates
 - Alcoholic beverages
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NEWSTART

