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FACT SHEET

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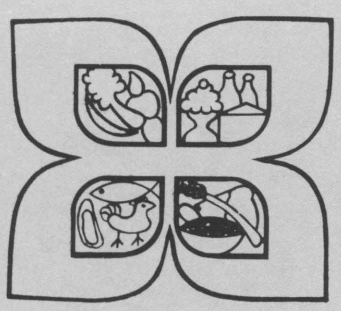

B-COMPLEX VITAMINS

Mary K. Sweeten*

More than a dozen vitamins compose the B complex. The B vitamins dissolve in water and are not stored by the body. These nutrients are important for the well-being of every cell and must be eaten daily to guard against deficiency.

The most familiar in this group are: thiamin (vitamin B_1), riboflavin (vitamin B_2) and niacin. Others are vitamin B_6, pantothenic acid, biotin, folacin, vitamin B_{12} and choline. The B-complex vitamins help the cells use energy from food. They also keep the nerves and skin in good condition.

Recommended Dietary Allowance

	Thiamin (Milligrams)	Riboflavin (Milligrams)	Niacin (Milligrams)
Infants	0.3-0.5	0.4-0.6	5-8
Children (1-10)	0.7-1.2	0.8-1.2	9-16
Males (11-14)	1.4	1.5	18
(15-22)	1.5	1.8	20
(23-50)	1.4	1.6	18
(51+)	1.2	1.5	16
Females (11-14)	1.2	1.3	16
(15-22)	1.1	1.4	14
(23+)	1.0	1.1-1.2	12-13
Pregnancy	+0.3	+0.3	+2
Lactating	+0.3	+0.5	+4

Food and Nutrition Board, National Academy of Sciences — National Research Council. Revised, 1973.

Thiamin

Your body uses thiamin for growth and to keep the nerves healthy. The absence of thiamin caused the ancient plague of beriberi. The disease was caused by improper carbohydrate utilization due to a deficiency of thiamin. This vitamin helps you enjoy what you eat by promoting good appetite and digestion. Although beriberi is uncommon today, deficiency of thiamin leads to poor appetite, nervousness and irritability.

Riboflavin

Riboflavin is essential for growth. It helps the body use carbohydrate, fat and protein. Riboflavin also helps the cells use oxygen, and promotes healthy nerves, skin, tongue and lips.

The deficiency symptoms are mouth sores and cracks and a burning sensation of the eyes. Deficiencies causing death have not been identified. This indicates that vitamin B_2 probably is produced to some extent by intestinal bacteria.

Niacin

Niacin is more stable to heat, light or air than either riboflavin or thiamin. It is essential for growth; use of carbohydrates and protein by the cell; healthy skin, mouth or tongue; and healthy digestive and nervous systems.

A deficiency of niacin may lead to skin rash, sore mouth and tongue, inflamed membranes in the digestive tract, mental depression and finally stupor (pellegra). This is known as the "anti-pellegra" vitamin. Pellegra was prevalent in the United States 25 years ago. Recent research indicates that pellegra is a result of a diet deficient in protein, niacin and other B vitamins. An amino acid tryptophan can be converted to niacin by the body. Dairy products contain tryptophan.

Recommended Dietary Allowance

	Vitamin B_6 (Milligrams)	Folacin (Micrograms)	Vitamin B_{12} (Micrograms)
Infants	0.3-0.4	50	0.3
Children (1-10)	0.6-1.2	100-300	1.0-2.0
Males (11-14)	1.6	400	3.0
(15-22)	1.8-2.0	400	3.0
(23-50)	2.0	400	3.0
(51+)	2.0	400	3.0
Females (11-14)	1.6	400	3.0
(15-22)	2.0	400	3.0
(23+)	2.0	400	3.0
Pregnant	2.5	800	4.0
Lactating	2.5	600	4.0

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Other B-Vitamins

Other B vitamins — B_6, B_{12} and folacin (folic acid) — help prevent anemia. Vitamin B_{12} and folic acid help the body to manufacture healthy blood. Vitamin B_6 is also involved in the use of protein by the cells and is necessary for the conversion of tryptophan to niacin.

Pantothenic acid and biotin help cells use protein, fat and carbohydrate. No recommended dietary allowance has been established for either of these B vitamins because they are so widely found in foods that they are almost unavoidable if a balanced diet is consumed.

Choline occurs in large quantities in the body and is used to metabolize fats. No one has been able to produce a choline deficiency because it occurs widely in most foods. This nutrient has no recommended dietary allowance as no deficiency has been shown.

Food Preparation

The B-complex vitamins are destroyed by heat and are easily destroyed in cooking water. Foods should be cooked carefully at moderate heat in a small amount of water for short periods of time. Proper food preparation will reduce the amount of B-complex vitamins lost in cooking. Riboflavin is not readily destroyed by cooking, but is partly destroyed by exposure to sunlight. For this reason, bread and milk should be kept out of direct sunlight.

Food Sources

B vitamins are found in all sections of the Daily Food Guide. Generally, foods in the meat groups are leading sources of these vitamins. Whole grain and enriched breads and cereals supply smaller but important amounts. Good sources of thiamin are lean pork, liver and whole grains. Sources of niacin include meats, dried peas, beans, whole and enriched grains and leafy greens. Milk is rich in riboflavin. Riboflavin is also found in eggs, lean meat and dark leafy greens.

Vitamin B_6 deficiencies are rare in the diets of the majority of the population, but may be a problem for young women who take birth control pills or who are pregnant. The intake of this vitamin tends to increase with protein eaten because most animal protein sources are good sources of vitamin B_6. Fish such as salmon and mackerel are excellent sources. Grains and some dairy products are not very good sources. One serving of milk contributes one-third of the amount of vitamin B_6 found in a serving of meat. Vegetarians should take special precautions against vitamin B_6 deficiency as it is not plentiful in grains, peas and beans, or in dairy products.

In contrast, pantothenic acid is very easy to secure as it is present in all plant and animal tissues. The body stores pantothenic acid in tissues as well. Pantothenic acid need not be of dietary concern.

Biotin is another member of the vitamin B complex for which there is no need for dietary concern. A balanced diet provides adequate amounts of this nutrient.

Folacin may be the hardest vitamin to secure because of its scarcity in most foods. Most foods contribute minor amounts of this vitamin. Green leafy vegetables, liver, wheat germ, brewer's yeast and dried beans are the best sources, although many foods supply minor amounts.

Vitamin B_{12} is found almost entirely in animal foods. This has led to some concern with the excessive use of unfortified soy proteins as meat substitutes by some persons. Vegetarians should include milk, eggs and fish in their diet if they are to obtain the recommended dietary allowance of this vitamin. Some cereals are fortified with vitamin B_{12}.

The average American diet contributes enough choline. Choline is found in animal proteins, with egg yolk, organ meats and brain the richest sources, and plant sources such as wheat germ and legumes.

Follow the food guide every day to insure a balanced diet. Adults and children need four or more servings daily from the Vegetable-Fruit and Bread-Cereal Groups and two or more 2-to 3-ounce servings of Meat Group Foods. Children need two or more servings; teenagers, four or more servings; and adults two or more servings from Milk Group Foods everyday. Plan your daily menus to follow the daily food guide.

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