

Vitamin Supplementation

Vitamins and Minerals

Vitamins and minerals are important elements of the total nutritional requirements of your child. Because the human body itself is unable to produce adequate amounts of many vitamins, they must be obtained from the diet. The body needs these vitamins in only tiny amounts, and in a balanced diet they are usually present in sufficient quantities in the foods your youngster eats. Thus, in middle childhood, supplements are rarely needed.

For some youngsters, however, pediatricians may recommend a daily supplement. If your child has a poor appetite or erratic eating habits, or if she consumes a highly selective diet (such as a vegetarian diet containing no dairy products), a vitamin supplement should be considered.

These over-the-counter supplements are generally safe; nonetheless, they are drugs. If taken in excessive amounts (in tablets, capsules, or combined with other supplements), some supplements—particularly the fat-soluble vitamins (A, D, E, and K)—can be toxic. Scientists are finding that in some special situations and diseases, vitamin supplementation can be an important contributor to health.

However, so-called megavitamin therapy or orthomolecular medicine—in which vitamins are given in extremely large doses for conditions ranging from autism to hyperactivity to dyslexia—has no proven scientific validity and may pose some risks. Vitamin C, for example, when consumed in mega doses in hopes of undermining a cold, can sometimes cause headaches, diarrhea, nausea, and cramps.

As much as possible, try to maximize the vitamins your child receives in her regular meals. Following are some of the vitamins and minerals necessary for normally growing children, and some of the foods that contain them.

Iron Especially during periods of rapid growth, **iron** is essential for the production of blood and the building of muscles. When iron levels are low, your child may demonstrate symptoms such as irritability, listlessness, depression, and an increased susceptibility to infection.

For the first four to six months, your breastfed baby needs no additional iron. The iron she had in her body at birth was enough to see her through her initial growth. Infants ages 7-12 months need 11 milligrams of iron a day, and should be given iron-supplemented baby cereals and meats. For example, four level tablespoons of fortified cereal, diluted with breastmilk or formula, provides 7 mg of iron; meat is another very good source of iron. Supplemented baby cereals should ideally be continued for until 2 years of age.

The AAP believes that babies who are not breastfed or are only partially breastfed should receive an iron-fortified formula (containing between 4 and 12 mg of iron) from birth through twelve months of age. We discourage the use of low-iron infant formulas as they do not contain enough iron to support an infant's proper growth and development.

Kids ages 1-12 years old need 7-10 milligrams of iron each day. Adolescent boys should get 11 milligrams, and menstruating adolescent girls need 15 mg.

Tips to maximize iron absorption:

- Limit milk intake to about 16-24 fluid ounces (473-710 milliliters) a day.
- Serve iron-rich foods alongside foods containing vitamin C — such as tomatoes, broccoli, oranges, and strawberries — which improves the body's absorption of iron.
- Avoid serving coffee or tea at mealtime — both contain tannins that reduce iron absorption.
- If you have a vegetarian in the family, monitor his or her diet to make it includes sufficient iron. Because iron from meat sources is more easily absorbed than iron from plant sources, you may need to add iron-fortified foods to a vegetarian diet.

Good natural iron sources include:

- red meat
- dark poultry
- tuna
- salmon
- eggs
- tofu
- enriched grains
- dried beans and peas

- dried fruits (prunes)
- leafy green vegetables
- blackstrap molasses
- iron-fortified breakfast cereals

Vitamin A promotes normal growth, healthy skin, and tissue repair, and aids in night and color vision. Rich sources include yellow vegetables, dairy products, and liver.

The **B vitamins** promote red blood cell formation and assist in a variety of metabolic activities. They are found in meat (including liver), poultry, fish, soybeans, milk, eggs, whole grains, and enriched breads and cereals.

Vitamin C strengthens connective tissue, muscles, and skin, hastens the healing of wounds and bones, and increases resistance to infection. Vitamin C is found in citrus fruits, strawberries, tomatoes, potatoes, Brussels sprouts, spinach, and broccoli.

Vitamin D promotes tooth and bone formation and regulates the absorption of minerals like calcium. Sources include fortified dairy products, fish oils, fortified margarine, and egg yolks. Although vitamin proponents insist that large doses of vitamin D—far greater than the U.S. Recommended Daily Allowances—can build even stronger bones, there is no evidence to support this claim, and excessive quantities of vitamin D are potentially toxic.

Where Can I Find Vitamin D?

The Sun

Vitamin D is unique in that its best source isn't food, but sunlight—hence its nickname, “the sunshine vitamin.” However, many variables affect vitamin D synthesis (skin color, time of day, time of year, geographical location, etc.), and sunscreen actually blocks synthesis entirely.

Note: To forego sunscreen is a personal choice and most experts would advise lathering up. Foods or supplements can also be a viable source of vitamin D, especially during the Northern Hemisphere's winter months, when sunlight is weaker and isn't as effective in triggering the skin's production of vitamin D.

Cereals, Grains, Fruits

Look for fortified grain products such as cereals, cereal bars, breads and crackers; or for fortified orange juice.

Note: Read the nutrition-facts panels of fortified foods to determine vitamin D content—some brands may have 10% of the RDA, while others have none.

Animal Sources

Fatty saltwater fish (salmon, halibut, mackerel, sardines) contain vitamin D naturally, as do egg yolks (especially those from hens fed vitamin D). Milk is a good fortified source (same for nondairy beverages such as rice milk or soymilk).

Note: One cup of vitamin D-fortified milk supplies about one-fourth of the current RDA for this vitamin.

Supplements

Cod liver oil is an age-old source of vitamin D, but may contain excessive amounts of vitamin A which may be toxic, and it can be aspirated (breathed into the lungs) in young children. A basic vitamin D supplement is the safest choice. Look for the ingredient cholecalciferol versus ergocalciferol.

Although the American Academy of Pediatrics recommends breastfeeding your baby for the first twelve months of her life, human milk does not contain sufficient vitamin D to prevent a deficiency of this vitamin, which can produce diseases such as rickets (the severe form of vitamin D deficiency characterized by the softening of bones).

As a result, the Academy recommends that if you are breastfeeding your baby, you need to provide her with supplemental vitamin D, beginning soon after birth. **Vitamin D supplements of 400 IU (International Units) per day are recommended for breastfed babies** unless they are weaned to at least 32 ounces (1,000 ml) of vitamin D–fortified formula. **Older children should also get at least 600 IU/day** through diet, formula, milk or supplements.

Vitamin D supplements:

- Carlson Vitamin D drops- 400 IU/dropper
- Enfamil D Vi Sol- 400 IU/dropper

Calcium As your child matures, calcium is necessary for healthy bone development. An inadequate calcium intake during childhood can not only affect present growth but might also help contribute to the development of weakened and porous bones (osteoporosis) later in life. Low-fat milk, cheese, yogurt, and sardines are excellent sources

of calcium. Some vegetables, such as broccoli and spinach, also contain modest amounts of calcium. **Fortified orange juice** contains the same amount of calcium per cup as milk (300 mg).

How much **Calcium** do kids need?

- **Ages 1-3:** 500-800 mg/day elemental Calcium
- **Ages 4-8:** 1,000 mg/day elemental Calcium
- **Ages 9-18:** 1,300 mg/day elemental Calcium
- **Carbonated soft drinks** including diet sodas contain Phosphoric Acid, which interferes with Calcium absorption; as a result most of the Calcium ingested in the diet is passed through in the urine.
- **Exercise** in combination with adequate Calcium intake is the ideal combination to help lay down strong bone in growing children.
- Taking calcium **with food** in **dosages of 500 mg or less** increases absorption.
- **Calcium Citrate** is absorbed better than Calcium Carbonate.
- **Read labels** and purchase foods with added Calcium

Food Sources of Calcium

Serving Size/Food	Mgs of Calcium
1 cup Yogurt plain, low fat	415
5 oz Tapioca pudding	119
1 cup Yogurt fruit, low fat	314
1 cup Cheerios	122
1 cup Skim milk	302
1 English muffin	103

1 cup 2% milk	291
1 cup Tofu	260
1 cup Orange juice with Ca	300
1 cup Spinach	245
1 oz American cheese	174
1 cup Broccoli	94
1 oz Mozzarella cheese	143
1 cup Kidney beans, can	69
1 oz Cheddar cheese	204
1 cup Soybeans	261
1 oz Swiss cheese	272
1 Orange	52
1 cup Cottage cheese	155
1 cup Raisins	73
1 cup Ricotta cheese, part skim	669
1 cup Almonds	332
½ cup Frozen yogurt, low fat	103
1 slice Cheese pizza, 10"	290
½ cup Ice cream, low fat	90
1 cup Mac & cheese	100
10 fl oz Vanilla shake	344
3 oz Salmon	180

Calcium Supplements

Type/Brand Name	Elemental Calcium(mg)
Tums/Tums EX	200 or 300
Tums Ultra/Tums 500	400 or 500
Caltrate 600	600
Caltrate 600+D	600mg/400 IU Vit D
Os-Cal 500	500

Os-Cal D	500mg/200 IU Vit D
Viactiv	500mg/100 IU Vit D
OneADay Women's	450mg/400 IU Vit D

Websites to help calculate daily calcium intake:

- www.lightnfit.com
- www.mypyramid.gov

Omega-3 fatty acids, or ALAs, are vital nutrients designated "essential" because our bodies can't produce them; instead, we have to take in a steady supply. While another type of essential fatty acids called Omega-6 is plentiful in the typical U.S. diet, Omega-3s lag far behind. The Omega-3s in fatty fish--EPA and DHA--can help reduce some heart-disease risk factors such as arrhythmias, triglycerides and blood pressure, while the plant form (ALA) may reduce risk of fatal heart disease. The American Heart Association advises healthy people to eat at least two servings of fish (particularly fatty fish) per week and to eat tofu and other forms of soybeans, as well as canola oil, walnuts and flaxseed, and their oils (www.americanheart.org)

Where Can I Get Omega-3s?

fish: The richest food sources are fatty fish such as sardines, lake trout, anchovies, salmon, herring, mackerel, halibut, striped bass, tuna and cod.

Caveat: Because fish can contain mercury, dioxin and other toxins--of special concern to nursing mothers and infants, all children and women of child-bearing age--you may want to plan your family's intake with the Physicians for Social Responsibility intake guide,

"Healthy Fish, Healthy Families," which you can download from www.mercuryaction.org/fish.htm.

plants: Many plant foods are loaded with the Omega-3 known as ALA. These foods contain less saturated fat than fish, though ALA may be less easily utilized than DHA and EPA according to current research. Standout sources include flaxseed, canola and soybean oils; walnuts and other nuts and their oils; chia seeds; great northern, kidney and navy beans; and soybeans and tofu.

Caveat: Because Omega-3 fatty acids spoil quickly and become unhealthful, it's best to store oils and nuts in the fridge. Flaxseed oil has a strong taste.

animal foods and other products: The diet that food-producing animals eat makes a big difference. Eggs from hens fed a diet that includes Omega-3-rich chia seeds, flax seeds, fish oil or marine algae contain more DHA than other eggs. Brands include Christopher Eggs, Gold Circle Farms, Organic Valley and Happy Hen. Meat from grass-fed animals can offer more Omega-3s and vitamin E. And some companies now enrich their foods to boost Omega-3s. Because DHA and ALA are found naturally in breast milk, they are now added to some formulas. Omega Farms produces fish-oil-enriched cheese, milk, yogurt and orange juice; A.C. Larocco makes tasty pizzas with a fish-oil-enriched organic crust and Stonyfield Farms offers child-sized cups of organic YoBaby Plus Fruit & Cereal with DHA/ALA.

supplements: Omega-3-rich hemp, flaxseed and micro-algae powders can be added to blender drinks. Check labels to see what you're getting. Fish-oil supplements that are pharmaceutical grade (free of contaminants) are available at pharmacies and natural foods stores.

Vegetarian diets

In recent years vegetarianism has grown in popularity. School-age children become more conscious that animals must be killed in order to obtain meat, and that knowledge may prompt them to choose a vegetarian diet. Vegetarian diets tend to be high in fiber and polyunsaturated fat, and low in cholesterol and calories.

If your child is following a vegetarian diet, you need to guard against nutritional deficiencies. There are various degrees of vegetarianism, and the strictness of the diet will determine whether your youngster is vulnerable to nutritional shortcomings.

Following are the common categories of vegetarians. Although none eat meat, poultry, or fish, there are other areas in which they vary:

- Lacto-ovo-vegetarians consume eggs, dairy products, and plant foods.
- Lacto-vegetarians eat dairy products and plant foods but not eggs.
- Vegans eat only plant foods, no eggs or dairy products.

Children can be well nourished on all three types of vegetarian diet, but nutritional balance is very difficult to achieve if dairy products and eggs are completely eliminated. Vegetarians sometimes consume insufficient amounts of calcium and vitamin D if they remove milk products from their diet.

Also, because of the lack of meat products, vegetarians sometimes have an inadequate iron intake. They may also consume insufficient amounts of vitamin B-12, zinc, and other minerals. If their caloric

intake is also extremely low, this could cause a delay in normal growth and weight gain.

Vegetarians may also lack adequate protein sources. As a result, you need to ensure that your child receives a good balance of essential amino acids. As a general guideline, his protein intake should come from more than one source, combining cereal products (wheat, rice) with legumes (dry beans, soybeans, peas), for example; when eaten together, they provide a higher quality mixture of amino acids than if either is consumed alone.

Other planning may be necessary. To ensure adequate levels of vitamin B-12, you might serve your child commercially prepared foods fortified with this vitamin. While calcium is present in some vegetables, your child may still need a calcium supplement if he does not consume milk and other dairy products. Alternative sources of vitamin D might also be advisable if there is no milk in the diet. Your pediatrician may recommend iron supplements, too, although your child can improve his absorption of the iron in vegetables by drinking citrus juice at mealtime.

CHOOSING A VITAMIN SUPPLEMENT

Not all vitamins are created equal. When choosing a vitamin, avoid:

- Hydrogenated vegetable oil
- Artificial dyes (Blue No. 2, Red No. 40, Yellow No. 6)
- High fructose corn syrup
- Artificial flavors

- Artificial sweeteners such as aspartame
- Preservatives such as butylated hydroxytoluene

Recommended sources:

Chewable Multi-vitamins:

- **L'il Critters** has a nice line of gummy vitamins, including Calcium, Vitamin D and omega-3 supplements:
<http://www.gummybearvitamins.com>
- **Juice Plus gummies**- from all natural fruit and vegetable extracts
<https://www.juiceplus.com>
Karen Belardinelli, distributor, luluandbean@snet.net or
203.438.0710/203.543.1232

Teen vitamin with iron, calcium, and vitamin D:

- <http://www.rainbowlight.com>

Vitamin D supplements:

- Carlson Vitamin D drops- 400 IU/dropper
- Enfamil D Vi Sol- 400 IU/1 ml dropper

Chewable multivitamin with IRON

- <http://flintstonesvitamins.com/complete/index.html#ingredients>
- <http://www.amazon.com/Natures-Plus-Childrens-Animal-Assorted/dp/B00012NGZI>

Liquid iron supplement

- Ferretts IPS (strawberry flavor)- 40 mg/15 ml
- Fer-in-sol drops- 15 mg/ml iron
- Poly-vi-sol- 10 mg/ml iron, plus multi-vitamins including 400 IU vitamin D

Vegan (gelatin free) chewable IRON

- <http://www.vitaminshoppe.com/search/en/query.jsp?q=chewable+iron&intsource2>

Powdered Pediatric Multi-Vitamin

- <http://store.metabolicmaintenance.com/ProductInfo.aspx?productid=HPEDMVPWDR>

Omega 3 supplements

- **Nordic Naturals** makes a kids' chewable gel-cap with a pleasing fruit taste as well as formulas for juniors and women (www.nordicnaturals.com)
- **N3 Oceanic** (<http://www.n3inc.com/blog/category/childrens-health/>) makes a liquid supplement for kids.
- **Trader Joes Sea Gummies**

Kiwi Magazine recently rated children's vitamin supplements; visit this link to see the winners:

- <http://www.kiwimagonline.com/vitamins/>