Vitamin B3 - Niacin

Vitamin B3 – Niacin is a water soluble vitamin involved in the breakdown of carbohydrates, fats, proteins, and alcohol to produce energy and is necessary for the synthesis of fatty acids and cholesterol. Symptoms of niacin deficiency may include a thick, scaly, darkly pigmented rash which develops symmetrically in areas exposed to sunlight, bright red tongue, vomiting and diarrhea, headache, apathy, fatigue, depression, disorientation, and memory loss Pellagra is late stage niacin deficiency - dermatitis, diarrhea, dementia, and death if not treated. Deficiency is a result of inadequate intake of niacin or other nutrients needed to convert the amino acid, tryptophan, into the coenzyme form of niacin, utilized by the body.

1 mg niacin can be synthesized from 60 mg of the amino acid tryptophan, as long as other nutrients required for the conversion are present (including vitamin B6, riboflavin, and iron).

No known adverse effect has been observed as a result of food sources of niacin. With supplements, nicotinic acid can cause flushing, itching, nausea, vomiting, and liver cell damage. Immediate release niacin is less toxic to the liver than sustained release or timed release. Other symptoms reported, associated with nicotinic acid supplementation may include skin rashes, dry skin, low blood pressure, and headache. Large doses may impair glucose tolerance and could elevate blood glucose. 1.5 - 5 grams per day (1500-5000 mg per day) have caused blurred vision.

Forms of niacin found in supplements include nicotinic acid, nicotinamide, and inositol hexanicotinate. People with abnormal liver function, history of liver disease, diabetes, active peptic ulcer disease, gout, cardiac arrhythmias, inflammatory bowel disease, migraine headaches, and alcoholism may be more susceptible to the adverse effects of excess nicotinic acid intake. Nicotinamide is generally better tolerated than nicotinic acid, although it does not have the cholesterol lowering effects. Inositol hexanicotinate, no flush niacin, is another form of niacin that does not cause the usual flush; however there is not enough data to establish and verify its safety and efficacy.

Further information pertaining to niacin can be found online, courtesy of the Linus Pauling Institute, of Oregon State University, at http://lpi.oregonstate.edu/infocenter/vitamins/niacin/.

The RDA of niacin for the average adult man is 16 milligrams (mg) and for the average adult woman is 14 mg. The tolerable upper limit (UL) has been set at 35 mg for the average adult. Information regarding RDA or UL for all other age groups, pregnancy, and lactation can be accessed at, http://iom.edu/en/Global/News%20Announcements/~/media/Files/Activity%20Files/Nutrition/DRIs/DRISummaryListing2.ashx, provided by the Institute of Medicine.

Good food sources of niacin (providing at least 40% of the average person's RDA) include 1 cup whole wheat flour, 1 cup buckwheat flour, 1 cup marinara sauce, 1 cup tomato paste, and 1 cup cooked mushrooms.

Significant food sources of niacin (contributing at least 20% of the average person's RDA) include 1 cup whole grain corn meal, 1 cup cooked pearled barley, 1 ¼ cups cooked long grain brown rice, 1 ½ cups cooked long grain white rice, 1 ½ cups cooked millet, 1 ½ cup cooked wild rice, 2 cups cooked bulgur, 2 cups cooked buckwheat groats, 1 ¾ cups cooked lentils, 2 cups cooked split peas, 1 ½ cups cooked green soybeans, 3 cups soy milk ½ cup sunflower seeds, 1 ¾ cups roasted European chestnuts, 1 ½ tablespoons peanut butter, 1 ounce or 28 peanuts, 3 mangoes, 3 nectarines, 3 cups cantaloupe, 2 cups cooked artichokes, 1 ½ cups cooked shiitake mushrooms, 2 cups mashed cooked sweet potatoes, 1 ½ baked potatoes, 1 ½ cups cooked frozen green peas, 1 ½ cups cooked frozen corn, 2 cups Jerusalem artichokes, and 3 cups cooked collards.

Specific amounts of niacin, contained in a variety of foods can be accessed online at the web page for the USDA National Nutrient Database for Standard Reference, Release 21, at http://www.ars.usda.gov/Services/docs.htm?docid=17477

Nutrient profiles for specific foods can be accessed at http://www.nal.usda.gov/fnic/foodcomp/search/.