

NUTRIENTS

Vitamins: Niacin

What is it?

Niacin is a water-soluble vitamin, and was formerly known as vitamin B-3. The term niacin refers to the general name for nicotinic acid and nicotinamide, which both form part of the coenzymes, nicotinamide adenine dinucleotide (NAD) and nicotinamide adenine dinucleotide phosphate (NADP).

Functions - what does it do?

Niacin forms part of coenzymes that are essential in the reactions involved in the release of energy from carbohydrates, fats and proteins.

Requirements - How much do we need?

Life-Stage (years)	Recommended Dietary Allowance* (mg of Niacin Equivalents (NE#)/day)	
	Males	Females
0 - 0.5 (0 - 6 months)	2a	2a
0.5 - 1 (7 - 12 months)	4a	4a
1 - 3	6	6
4 - 8	8	8
9 - 13	12	12
14 - 18	16	14
Ages 19+	16	14
Life-Stage (years)	Pregnancy	Lactation
18 and younger	18	17
19 - 30	18	17
Ages 31+	18	17

#1 mg NE = 60 mg of tryptophan (amino acid) = 1 mg niacin

øThe amino acid, tryptophan, can be converted to niacin in the body

*The Recommended Dietary Allowance (RDA) is the average daily dietary intake level that is sufficient to meet the nutrient requirements of nearly all (97-98%) healthy individuals in each life-stage and gender group.

aAdequate Intakes (AI) are used as no RDA is established. The AI is a recommended daily intake level based on observed or experimentally determined approximations of nutrient intake by a group of healthy people who are assumed to be maintaining an adequate nutritional state.

Sources - Where is it found?

Niacin

Rich sources

Lean meats, Poultry, Fish, Peanuts, Peanut butter, Organ meats, Brewer's yeast

Other sources

Beans, Peas, Other legumes, Most nuts, Whole grains or Enriched cereals

Poor sources

Milk, Eggs, Vegetables, Fruits

Tryptophan

Rich sources

Lean meats, Poultry, Fish, Peanuts, Milk, Eggs

Other sources

Beans, Peas, Other legumes, Most nuts, Whole grains or Enriched cereals

Deficiency - When you have too little

Symptoms of niacin deficiency in the early stages include muscular weakness, anorexia (loss of appetite), indigestion, and skin eruptions.

Pellagra. The late stage of severe niacin deficiency is known as pellagra. The most common symptoms involve the skin, digestive system, and the nervous system. In the skin, a thick, scaly, darkly pigmented rash develops, similar to a sunburned outbreak, in areas exposed to sunlight, such as hands, forearm, neck and legs. Symptoms related to the digestive system include a bright red and swollen tongue, vomiting, and diarrhoea. The central nervous system is also affected and symptoms include headache, apathy, fatigue, depression, disorientation, and memory loss. If untreated, pellagra is ultimately fatal.

Toxicity - When you have too much

Niacin from foods is not known to cause adverse effects. Niacin can become toxic at 100 mg or more of the nicotinic acid form. Effects include headache, itching, flushing and gastrointestinal disturbances such as nausea and vomiting.

Life-Stage (years)	Upper Limit+ (mg of Niacin Equivalents#/day)	
	Males	Females
0 - 0.5 (0 - 6 months)	ND	ND
0.5 - 1 (7 - 12 months)	ND	ND
1 - 3	10	10
4 - 8	15	15
9 - 13	20	20
14 - 18	30	30
Ages 19+	35	35
Life-Stage (years)	Pregnancy	Lactation
18 and younger	30	30
19 - 30	35	35
Ages 31+	35	35

#1 mg Niacin Equivalents (NE) = 60 mg of tryptophan (amino acid) = 1 mg niacin

+Upper Limits (UL) = The maximum level of daily nutrient intake that is likely to pose no risk of adverse effects. Unless otherwise specified, the UL represents total intake from food, water, and supplements.

ND = Not determinable due to lack of data of adverse effects in this age group and concern with regard to lack of ability to handle excess amounts. Source of intake should be from food only to prevent high levels of intake.

For further, personalized and more detailed information, please contact a dietitian registered with the Health Professions Council of South Africa. *References from the scientific literature used to compile this document are available on request.*

Human Nutrition | Menslike Voeding

Fakulteit Geneeskunde en Gesondheidswetenskappe /
Faculty of Medicine and Health Sciences
Universiteit Stellenbosch University
Francie van Zijl Rylaan / Drive; Tygerberg; Kaapstad / Cape Town
Posbus / PO Box 241; Kaapstad / Cape Town; 8000
Suid-Afrika / South Africa
Tel: +27 21 938-9259
e-pos / e-mail: irene@sun.ac.za
www.sun.ac.za



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