Recommendations for vitamins, minerals and trace elements

Fact sheet

Vitamins, minerals and trace elements are micronutrients that are essential for the growth, maintenance and proper functioning of the body. They do not provide energy. An adequate intake of micronutrients is essential for the maintenance of good health and for the prevention of chronic diseases.

Vitamins can be classified into fat-soluble vitamins (A, D, E, K) and water-soluble vitamins (thiamine (B_1), riboflavin (B_2), niacin (B_3), pantothenic acid (B_5), pyridoxine (vitamin B_6), biotin (B_8), folic acid (B_{11}), cobalamin (vitamin B_{12}) and vitamin C). Essential minerals are sodium, potassium, magnesium, calcium, chloride and phosphorus. The essential trace elements are iron, zinc, iodine, selenium, copper, manganese and molybdenum.

Vitamins, essential minerals and trace elements can not be synthesised by the body and must, therefore, be ingested as part of the diet. Some exceptions to this are vitamin D (that can be synthesised in the skin under the influence of sunlight) and vitamin K (which is produced in small quantities in the intestine).

Dietary reference values (DRV) have been determined for healthy individuals' micronutrient requirements. This fact sheet is a summary of the DRVs for vitamins, minerals and trace elements used by the Netherlands Nutrition Centre. We explain why we use particular DRVs.

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For whom is it relevant?

DRVs provide policymakers and professionals with practical guides for advice and recommendations for consumers.

DRVs are used for:[1]

- Developing dietary guidelines for healthy individuals.
- Evaluating the nutrient intake of individuals who have been found to have a poor nutritional status.
- Preparing menus (including daily menus) for healthy groups of individuals in institutions.
- Evaluating the nutrient intake of groups of healthy individuals based on food consumption data.
- Developing the Health Council of the Netherlands' "Guidelines for a healthy diet".

What issues are involved?

The Health Council is responsible for determining DRVs in the Netherlands. Some Dutch DRVs are now outdated and in need of revision. In addition, some micronutrients are not yet covered by standards. In the upcoming years, the Health Council will determine new Dutch DRVs, based on new European standards. Until then, for some micronutrients, the DRVs used in other countries will be used.

Relevant developments in DRVs

In 1992, the former Food and Nutrition Council published a report entitled "Dutch Dietary Reference values".[2] The recommendations in this report are based primarily on the maintenance of a normal metabolism. In an international workshop organised by the Food and Nutrition Council in 1995, it was concluded that the maintenance of health and the prevention of chronic diseases should be taken into account when determining DRVs. This was prompted by the fact that scientific research was finding increasing evidence of a link between the intake of certain nutrients (and micronutrients) and the development of chronic diseases.

In 1996, the National Nutrition Council merged with the Health Council. Since the year 2000, the latter has revised a number of DRVs.[1, 3-5] In these revisions the Council takes new findings into account. Some of the current Dutch DRVs for micronutrients date from 1992, so they are no longer up-to-date. This involves vitamin A, vitamin C, vitamin E, phosphorus, magnesium, iron, zinc, copper and selenium. Furthermore, in the Netherlands, no standards have yet been determined for vitamin K (except for infants below the age of 3 months), biotin (except for infants up to the age of 6 months), potassium, iodine, manganese and molybdenum.

In Scandinavia, new DRVs have recently been derived for the majority of these micronutrients.[6] In addition, the European Food Safety Authority (EFSA) has started preparing DRVs for the European population. This work is scheduled for completion by mid-2015. Standards have already been determined for a number of micronutrients (manganese, molybdenum, fluoride, vitamin C, biotin, pantothenic acid).[7-12] While standards have been determined for niacin and iodine,[13, 14] they have yet to be officially adopted.

Dietary reference values

DRVs indicate the quantity of nutrients that individuals need to take in order to stay healthy. They are intended for use by the healthy population, and are determined for various population groups. These include children, adults, men and women, as well as pregnant and lactating women.

The term dietary reference values covers a range of concepts: average requirement, recommended dietary allowance (RDA), adequate intake (AI) and tolerable upper intake level.

Requirement

The requirement for a nutrient is the intake that:

- helps maintain a normal metabolism;
- reduces the risk of chronic diseases related to the nutrient in question as much as possible.

Average requirement

The average requirement is the intake that is sufficient to meet the requirements of half of the individuals in a given population group. If the nutrient requirement in a population group has a normal statistical distribution, it means that an intake equivalent to the average requirement is sufficient for 50% of the individuals in that group, but insufficient for the remaining 50%.

For many nutrients, the average requirement can be used to estimate how many individuals in a population group are ingesting too little of the nutrient in question.

Recommended dietary allowance (RDA)

The RDA is the intake that is sufficient to meet the needs of almost all the individuals (97.5%) in a given population group. For many individuals, the RDA exceeds their actual requirements. A lower intake at the level of the individual does not necessarily mean that the person in question is developing a deficit. The recommended dietary allowance is a target value that is used to ensure that an individual ingests an adequate amount of a particular nutrient.

The RDA can only be determined if sufficient data is available on which to base an estimate of the average requirement. The RDA can be calculated by taking the average requirement and adding a value equivalent to twice its standard deviation (see Figure 1). The variation in requirement between individuals is often calculated using a coefficient of variation of between 10% and 20%. In that case, the RDA is calculated as the average requirement multiplied by a value ranging from 1.2 to 1.4.

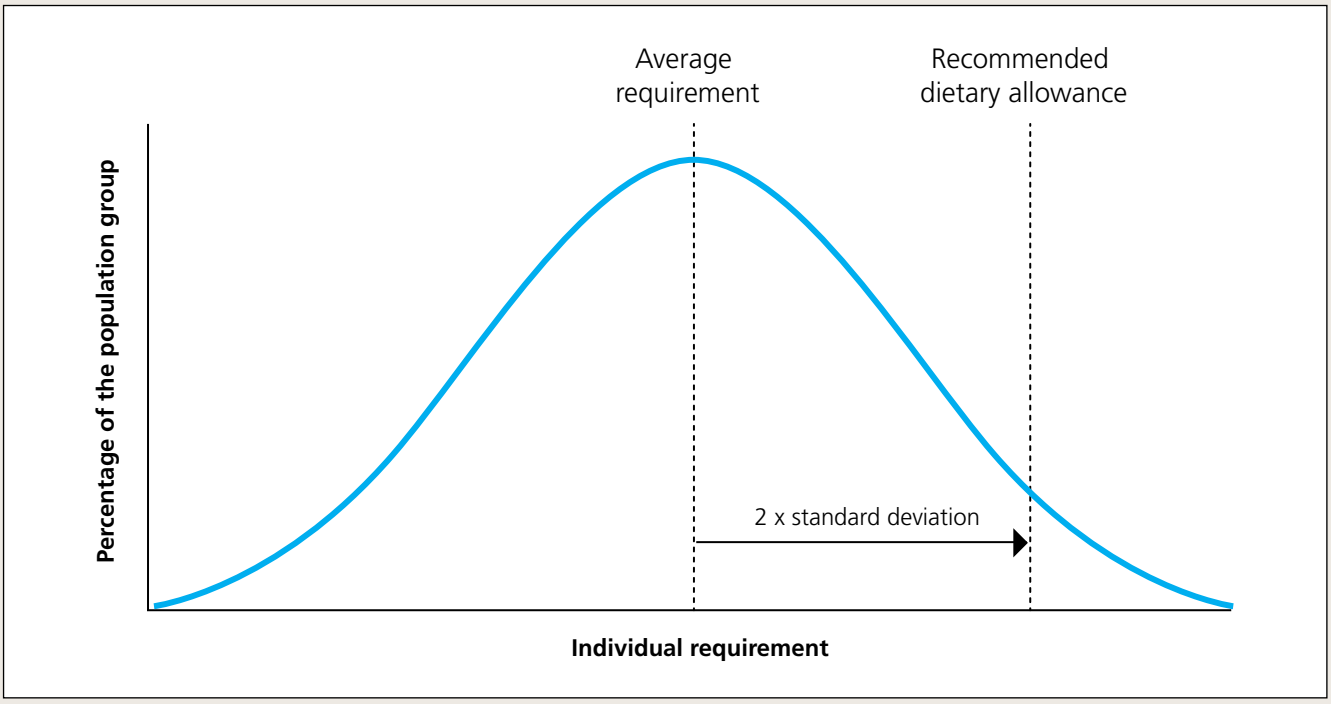


Figure 1. Average requirement (sufficient for half of the population) and recommended dietary allowance (sufficient for almost everyone) if the requirement has a normal distribution.
Source: Health Council, 2003.[1]

Adequate intake (AI)

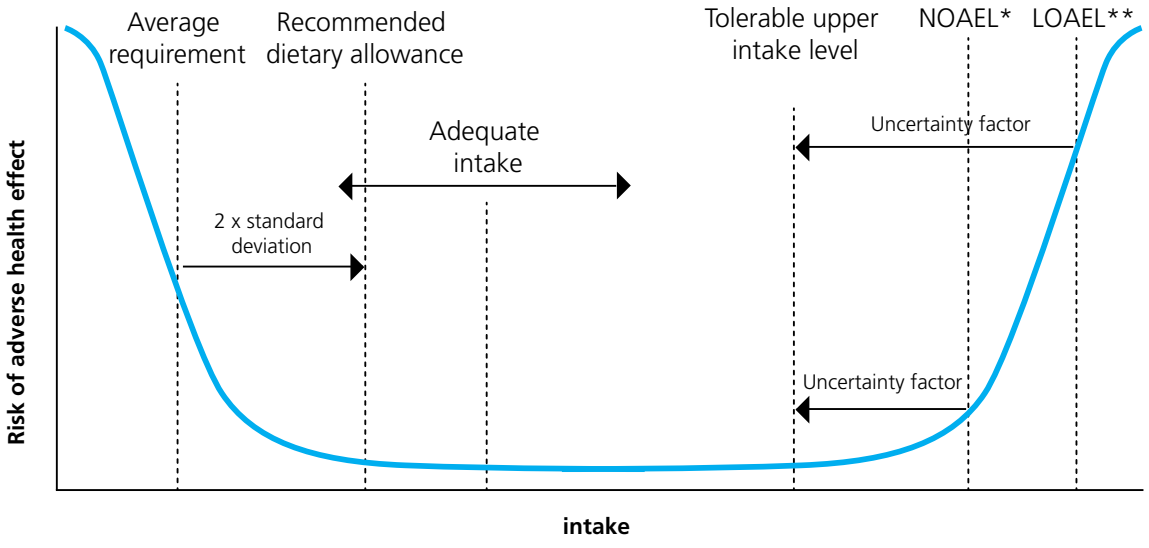
If there is insufficient data to determine the average requirement, then no value can be derived for the RDA. In that case, the adequate intake (AI) is estimated on the basis of the information available. The AI is the intake that is assumed to be sufficient to meet the needs of almost all the individuals in a given population group. The AI will often be higher than the RDA in those cases where it would have been possible to determine this quantity.[1]

The RDA and the AI can be used the same way. This is because they both show how much of a certain nutrient an individual should ingest. With the AI, as with the RDA, a lower intake does not necessarily mean that the person in question is developing a deficit.

Tolerable upper level

The tolerable upper level is the highest intake at which no harmful effects (or harmful health effects) can be expected, following prolonged exposure. The tolerable upper level is derived from the highest intake level at which no adverse effects occur (No Observed Adverse Effect Level or NOAEL) or the lowest level at which potential adverse effects might be seen (Lowest Observed Adverse Effect Level or LOAEL).

The tolerable upper level is then determined by using an uncertainty factor (see Figure 2). This tolerable upper level is always higher than the desirable intake level, the RDA or the AI.



* The NOAEL (No Observed Adverse Effect Level) is the highest intake at which no adverse effects are observed

** The LOAEL (Lowest Observed Adverse Effect Level) is the lowest level of intake at which adverse effects are observed.

Figure 2. Diagrammatic relationship between individual intake and the chance that this coincides with an adverse level. Source: Health Council, 2003.[1]

What values does the Netherlands Nutrition Centre use for the RDA and the AI?

The Netherlands Nutrition Centre has always used the Health Council's DRVs. In consultation with the Health Council, it has been determined that Dutch DRVs pre-dating the year 2000 should not be used. One of the reasons for this is that they do not take account of the prevention of chronic diseases.

In the case of the nutrients in question, we use DRVs that do take this into account (in compliance with a Health Council recommendation). That is the case with the DRVs used by Scandinavia's Nordic Council (NC), the European Food Safety Authority (EFSA) and the US Institute of Medicine (IOM). The Scandinavian standards are preferable in this regard, because these have recently been fully released, are transparent and, in terms of methodology, fit in well with the Dutch standards.[15] In the upcoming years, the Health Council will evaluate and implement the EFSA standards.

Until then, the Health Council recommends the following prioritisation:

1. The preferred DRVs are those that have been used by the Health Council since the year 2000.[1, 3, 4]
2. Where the Dutch standards are obsolete or where no relevant standards are available, the NC's DRVs are used. The European EURRECA project determined that these standards are relatively transparent.[15] This involves vitamin A, vitamin C, vitamin E, phosphorus, magnesium, iron, zinc, copper, selenium, potassium and iodine.[6]
3. Where there are no applicable NC standards, the recently determined EFSA DRVs are used. This is because recent European standards have priority over American ones. This involves manganese, molybdenum, fluoride and biotin (for age groups above the age of six months). [7, 8, 10, 12]
4. If even the EFSA has not yet determined a relevant standard then the IOM's DRVs predominate. These are the standards for vitamin K[16] (for age groups above the age of three months) and chromium.[16]

What values for the tolerable upper levels does the Netherlands Nutrition Centre use?

The Netherlands Nutrition Centre uses the EFSA's standards for the tolerable upper level.[17, 18, 19]
The EFSA has carried out the most recent evaluation of the tolerable upper levels, and that evaluation predominates with regard to Dutch policy. There are some micronutrients for which the EFSA has not determined a tolerable upper level. These are nutrients for which there is no evidence that high intake constitutes a risk, where current consumption makes excessive intake unlikely, or for which – based on the available data set – it is not possible to determine an upper level.

Dietary reference value summary for vitamins, minerals and trace elements

Table 1 shows the DRVs for all vitamins. Table 2 contains the DRVs for most minerals and trace elements. The tables always show whether the value presented is the recommended dietary allowance (RDA) or the adequate intake (AI). The tolerable upper levels are also displayed.

Table 1A. Daily recommendations for vitamins: recommended dietary allowance (RDA) or adequate intake (AI)

	VITAMINS												
	A mcg[2]	D mcg	E mg[3]	K mcg	Thiamine (B_1) mg	Riboflavin (B_2) mg	Niacin (B_3) mg[4]	Pantothenic acid (B_5) mg	B_6 mg	Biotin (B_8)[5] mcg	Folate (B_{11}) mcg	B_{12} mcg	C mg
Source[1]	NC 2012	GR 2012	NC 2012	IOM 2001	GR 2000	GR 2000	GR 2000	GR 2000	GR 2003	EFSA 2014	GR 2003	GR 2003	NC 2012
Dietary reference value (DRV)	RDA	AI	RDA	AI	AI/**RDA**	AI/**RDA**	AI/**RDA**	AI	AI/**RDA**	AI	AI/**RDA**	AI/**RDA**	**RDA**
Children													
< 6 months	-	10	-	150[6]	0,2	0,4	2	2	0,12/0,20[7]	5	50	0,4	-
6-11 months	300	10	3	-	0,2	0,4	2	2	0,2	6	60	0,5	20
aged 1-2	300	-	4	-						-	-	-	25
aged 1-3	-	10	-	30	0,3	0,5	4	2	0,4	20	85	0,7	-
aged 2-5	350	-	5	-	-	-	-	-	-	-	-	-	30
aged 4-8	-	10	-	55	0,5	0,7	7	3	0,7	-	150	1,3	-
aged 4-10	-	-	-	-	-	-	-	-	-	25	-	-	-
aged 6-9	400	-	6	-	-	-	-	-	-	-	-	-	40
Men													
aged 9-13	600	10	8	60	0,8	1,0	11	4	1,1	-	225	2,0	50
aged 11-17	-	-	-	-	-	-	-	-	-	35	-	-	-
aged 14-18	900	10	10	75	1,1	1,5	17	5	1,5	-	300	2,8	75
aged 19-70	900	10	10	120	**1,1**[8]	**1,5**	**17**	5	**1,5/1,8**[7]	40	**300**	**2,8**	75
aged >70	900	20	10	120	1,1	**1,5**	**17**	5	**1,8**	40	**300**	**2,8**	75
Women													
aged 9-13	600	10	7	60	0,8	1,0	11	4	1,1	-	225	2,0	50
aged 11-17	-	-	-	-	-	-	-	-	-	35	-	-	-
aged 14-18	700	10	8	75	1,1	1,1	13	5	1,5	-	300	2,8	75
aged 19-70	700	10	8	90	**1,1**[8]	**1,1**	**13**	5	**1,5**	40	**300**	**2,8**	75
aged >70	700	20	8	90	1,1	**1,1**	**13**	5	**1,5**	40	**300**	**2,8**	75
Pregnant women	800	10	10	90	**1,4**	**1,4**	17	5	**1,9**	40	400	**3,2**	85
Lactating women	1100	10	11	90	**1,7**	**1,7**	20	7	**1,9**	45	400	**3,8**	100

1 Abbreviations: HCN = Health Council of the Netherlands. NC = Nordic Council. EFSA = European Food Safety Authority. IOM = Institute of Medicine.
2. Vitamin A occurs in a variety of forms, so it is expressed in retinol equivalents (RE).
   1 RE corresponds to 1 µg retinol or 12 µg βcarotene, a provitamin A.
3. Vitamin E occurs in a variety of forms, so it is expressed in tocopherol equivalents (TE).
   1 TE corresponds to 1 mg α tocopherol, 2.5 mg β-tocopherol, 10 mg γtocopherol, or 100 mg δ-tocopherol.
4. Niacin occurs in a variety of forms, so it is expressed in nicotinic acid equivalents (NE).
5. In the case of biotin, the HCN has only determined an AI for infants aged 0-6 months.
6. With regard to vitamin supplementation, the HCN has only made a recommendation for vitamin K, for infants aged 0-3 months (HCN 2010).
7. In the case of vitamin B6, the value is 0.12 mg/day (with non-supplemented breastfeeding) and 0.20 mg/day (with bottle-feeding).
   The RDA for men aged 51-70 is 1.8 mg per day.
8. In the case of thiamine, an adequate intake has been determined for the 51-70 age group.

Table 1B. Tolerable upper level for vitamins (levels shown are per day)

	VITAMINS												
	A mcg[1]	D mcg	E mg[2]	K mcg	Thiamine (B_1) mg	Riboflavin (B_2) mg	Niacin (B_3) mg	Pantothenic acid (B_5) mg	B_6 mg	Biotin (B_8)[5] mcg	Folate (B_{11}) mcg	B_{12} mcg	C mg
							NZ/NA[3]				[4]		[5]
aged 0-1	-	25	-	-	-	-	-	-	-	-	-	-	-
aged 1-3	800	50	100	-	-	-	2/150	-	5	-	200	-	-
aged 4-6	1100	50	120	-	-	-	3/220	-	7	-	300	-	-
aged 7-10	1500	50	160	-	-	-	4/350	-	10	-	400	-	-
aged 11-14	2000	100	220	-	-	-	6/500	-	15	-	600	-	-
aged 15-17	2600	100	260	-	-	-	8/700	-	20	-	800	-	-
aged >17	3000	100	300	-	-	-	10/900	-	25	-	1000	-	-

Source: EFSA 2006.[17] For vitamin D: EFSA 2012[18]
1. Expressed in retinol equivalents.
2. Expressed in α–tocopherol equivalents.
3. Niacin occurs in a variety of forms: NA = nicotinic acid. NAM = nicotinamide. These forms have different tolerable upper levels.
   In supplements and food additives, nicotinamide is generally used.[17]
4. The tolerable upper level only applies to synthetic folic acid (pteroylmonoglutamic acid). That is found in supplements and fortified foods.
5. EFSA (2006) indicates that quantities of more than 1 gram per day may produce gastric symptoms.

Table 2A. Daily recommendations for minerals and trace elements: recommended dietary allowance (RDA) or adequate intake (AI)

	MINERALS				TRACE ELEMENTS								
	Calcium mg	Phosphorus mg	Potassium mg	Magnesium mg	Iron mg	Zinc mg	Copper mg	Iodine mcg	Selenium mcg	Manganese mg	Molyb-denum mcg	Fluoride mg	Chromium mcg
Source[1]	GR 2000	NC 2012	NC 2012	NC 2012	NC 2012	NC 2013	NC 2012	NC 2012	NC 2012	EFSA 2013	EFSA 2013	EFSA 2013	IOM 2001
Dietary reference value (DRV)	AI	RDA	RDA	RDA	RDA	RDA	RDA	RDA	RDA	AI	AI	AI	AI
Children													
< 6 months	210	-	-	-	-	-	-	-	-	-	-	-	0,2
6-11 months	450	420	1100	80	8	5	0,3	50	15	0,02 - 0,5	10	0,4	5,5
aged 1-2	-	470	1400	85	8	5	0,3	70	20	-	-	-	-
aged 1-3	500	-	-	-	-	-	-	-	-	0,5	15	0,6	11
aged 2-5	-	470	1800	120	8	6	0,4	90	25	-	-	-	-
aged 4-6	-	-	-	-	-	-	-	-	-	1,0	20	0,9/1,0[2]	-
aged 4-8	700	-	-	-	-	-	-	-	-	-	-	-	15
aged 6-9	-	540	2000	200	9	7	0,5	120	30	-	-	-	-
aged 7-10	-	-	-	-	-	-	-	-	-	1,5	30	1,4/1,5[2]	-
Men													
aged 9-13	1200	700	3300	280	11	11	0,7	150	40	-	-	-	25
aged 11-14	-	-	-	-	-	-	-	-	-	2,0	45	2,2	-
aged 15-17	-	-	-	-	-	-	-	-	-	3,0	65	3,2	-
aged 14-18	1200	700	3500	350	11	12	0,9	150	60	-	-	-	35
aged 19-50	1000	600[3]	3500	350	9	9	0,9	150	60	3,0	65	3,4	35
aged 50-70	1100	600	3500	350	9	9	0,9	150	60	3,0	65	3,4	30
aged >70	1200	600	3500	350	9	9	0,9	150	60	3,0	65	3,4	30
Women													
aged 9-13	1100	700	2900	280	11	8	0,7	150	40	-	-	-	21
aged 11-17	-	-	-	-	-	-	-	-	-	2,0	45	2,3	-
aged 15-17	-	-	-	-	-	-	-	-	-	3,0	65	2,8	-
aged 14-18	1100	700	3100	280	15	9	0,9	150	50	-	-	-	24
aged 19-50	1000	600[3]	3100	280	15/9[4]	7	0,9	150	50	3,0	65	2,9	25
aged 50-70	1100	600	3100	280	9	7	0,9	150	50	3,0	65	2,9	20
aged >70	1200	600	3100	280	9	7	0,9	150	50	3,0	65	2,9	20
Pregnant women	1000	700	3100	280	[5]	9	1,0	175	60	3,0	65	2,9	30
Lactating women	1000	900	3100	280	15	11	1,3	200	60	3,0	65	2,9	45

1. Abbreviations: HCN = Health Council of the Netherlands. NC = Nordic Council. EFSA = European Food Safety Authority. IOM = Institute of Medicine.
2. The values for fluoride differ between girls and boys: girls / boys.
3. For individuals aged from 18 to 20, 700 mg of phosphorus per day is recommended.
4. The recommended amount for women who are still menstruating is 15 mg, while for postmenopausal women the recommendation is 9 mg.
5. During pregnancy, women require additional iron.

Table 2B. Tolerable upper level for minerals and trace elements (levels shown are per day)

	MINERALS				TRACE ELEMENTS								
	Calcium mg	Potassium mg	Kalium mg	Magnesium mg	Iron mg	Zinc mg	Copper mg	Iodine mcg	Selenium mcg	Manganese mg	Molyb-denum mcg	Fluoride mg	Chromium mcg
	[1]	[2]	[3]	[4]	[5]					[6]			[7]
aged 0-1	-	-	-	-	-	-	-	-	-	-	-	-	-
aged 1-3	-	-	-	-	-	7	1	200	60	-	100	1,5	-
aged 4-6	-	-	-	250	-	10	2	250	90	-	200	2,5	-
aged 7-10	-	-	-	250	-	13	3	300	130	-	250	5	-
aged 11-14	-	-	-	250	-	18	4	450	200	-	400	7	-
aged 15-17	-	-	-	250	-	22	4	500	250	-	500	7	-
aged >17	2500	3000	3000	250	25	25	5	600	300	-	600	7	1000

Source: EFSA 2006.[17] For calcium: EFSA 2012[19]

1. EFSA (2012) has only determined a tolerable upper level for adults.
2. The EFSA has not determined a tolerable upper level for phosphorus. No adverse effects have been demonstrated at levels of up to 3 grams per day.
3. The EFSA has not determined a tolerable upper level for potassium. No adverse effects have been demonstrated following the long-term use of 3 grams of potassium chloride per day taken as a supplement. In some cases, gastrointestinal symptoms may occur when 1–5 grams per day are taken as a supplement.
4. The tolerable upper level for magnesium applies to supplements taken in addition to normal consumption.
5. Taking excessive quantities of iron supplements can cause gastrointestinal symptoms. The EFSA (2006) has not determined a tolerable upper level for iron. The NC gives a tolerable upper level of 25 mg/day.[6]
6. The use of manganese at levels in excess of the normal intake from the diet carries a potential risk of harmful effects. There is no evidence that this can deliver health gains. There is insufficient data to determine a tolerable upper level.
7. Chromium: The EFSA has not determined a tolerable upper level. There is no evidence that using 1 gram of chromium as a supplement produces adverse effects.

Looking to the future

By mid-2015, the EFSA will have finished establishing DRVs for the remaining vitamins, minerals and trace elements. The Health Council will evaluate these standards as a basis for preparing a recommendation for Dutch DRVs. If the EFSA determines new standards for vitamin K and chromium before that time, then (in accordance with the advice of the Health Council) the Netherlands Nutrition Centre will use them. With regard to standards for the remaining micronutrients, the DRVs contained in this fact sheet will be used until the Health Council publishes its recommendations. This fact sheet will, therefore, be regularly updated.

In a future fact sheet on vitamins and minerals, we will give details of the evidence on which our recommendations concerning micronutrient and supplement intakes are based.

Relevant links

www.gezondheidsraad.nl/nl/adviezen/gezonde-voeding
www.efsa.europa.eu/en/search.htm?text=dietary+reference+values
www.norden.org/en/theme/nordic-nutrition-recommendation
www.iom.edu/Activities/Nutrition/SummaryDRIs/DRI-Tables.aspx
www.eurreca.org

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References

1. *Gezondheidsraad, Voedingsnormen Vitamine B6, foliumzuur en vitamine B12, 2003, Gezondheidsraad: Den Haag. p. 1-142.*
2. *Voedingsraad, Nederlandse voedingsnormen 1989, 1992, Voorlichtingsbureau voor de Voeding: Den Haag. p. 1-293.*
3. *Gezondheidsraad, Voedingsnormen: calcium, vitamine D, thiamine, riboflavine, niacine, pantotheenzuur en biotine, 2000, 2000/12: Den Haag. p. 1-182.*
4. *Gezondheidsraad, Evaluatie van de voedingsnormen voor vitamine D, 2012, Gezondheidsraad: Den Haag. p. 1-150.*
5. *Gezondheidsraad, Voedingsnormen: energie, eiwitten, vetten en verteerbare koolhydraten, 2001, Gezondheidsraad: Den Haag. p. 1-174.*
6. *Nordic Council, Nordic Nutrition Recommendations 2012 - Part 1 2013: Copenhagen.*
7. *EFSA, Scientific Opinion on Dietary Reference Values for Molybdenum. EFSA Journal, 2013. 11(8): p. 1-35.*
8. *EFSA, Scientific Opinion on Dietary Reference Values for Fluoride. EFSA Journal, 2013. 11(8): p. 1-47.*
9. *EFSA, Scientific Opinion of Dietary Reference Values for Vitamin C. EFSA Journal, 2013. 11(11): p. 3418.*
10. *EFSA, Scientific Opinion on Dietary Reference Values for Manganese. EFSA Journal, 2013. 11(11): p. 3419.*
11. *EFSA, Scientific Opinion on Dietary Reference Values for Pantothenic acid. EFSA Journal, 2014. 12(2): p. 3581.*
12. *EFSA, Scientific Opinion on Dietary Reference Values for Biotin. EFSA Journal, 2014. 12(2): p. 3580.*
13. *EFSA, Draft Scientific Opinion on Dietary Reference Values for Iodine. EFSA Journal, 2014.*
14. *EFSA, Draft Scientific Opinion on Dietary Reference Values for Niacin. EFSA Journal, 2014.*
15. *Dhonukshe-Rutten, R.A.M.e.a., EURRECA - Evidence-Based Methodology for Deriving Micronutrient Recommendations Critical Reviews in Food Science and Nutrition, 2012. 53(10): p. 999-1040.*
16. *Institute-of-Medicine, Dietary reference intakes for vitamin A, vitamin K, arsenic, boron, chromium, copper, iodine, iron, manganese, molybdenum, nickel, silicon, vanadium and zinc, 2001, National Academies Press: Washington DC.*
17. *EFSA, Tolerable Upper Intake Levels for Vitamins and Minerals - Scientific Committee on Food/Scientific Panel on Dietetic Products, Nutrition, Allergies, 2006, EFSA: Brussel.*
18. *EFSA, Scientific Opinion on the Tolerable Upper Intake Level of Vitamin D. EFSA Journal 2012. 10(7): p. 2813:1-45.*
19. *EFSA, Scientific Opinion on the Tolerable Upper Level of Calcium. EFSA Journal 2012;10(7):2814.*

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