

# Overview on Tolerable Upper Intake Levels as derived by the Scientific Committee on Food (SCF) and the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA)

The Tolerable Upper Intake Level (UL) is the maximum level of total chronic intake of a nutrient from all sources judged to be unlikely to pose a risk of adverse health effects in humans (EFSA NDA Panel, 2022a).

Following a request from the European Commission, the Scientific Committee on Food (SCF), which was the predecessor of EFSA, started off in the year 2000 with giving scientific advice in relation to ULs for vitamins and minerals. The task was then taken over by EFSA when it became operational. As a result, EFSA and the SCF published a report of their first series of scientific opinions on ULs for vitamins and minerals in 2006 (EFSA, 2006). The report also covered trace elements such as boron, nickel, tin and vanadium.

Updates of individual scientific opinions were then carried out by the NDA Panel for calcium (2012), vitamin D (2012, 2018 (infants) and 2023), selenium (2023), vitamin B6 (2023), folate (2023) and manganese (2023). Other re-evaluations are on-going. This document will be updated accordingly.

This document provides an overview about the outcome of the SCF's and EFSA's scientific deliberations. The detailed reasoning for establishing individual values can be found in the related opinions of the SCF and NDA Panel.

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## Summary of Tolerable Upper Intake Levels

Table 1: Tolerable Upper Intake Levels for **minerals**

	Unit	4-6 mo <sup>(a)</sup>	7-11 mo <sup>(b)</sup>	1-3 y	4-6 y	7-10 y	11-14 y	15-17 y	Adults	Pregnancy	Lactation	Ref
<b>Boron</b>	mg/d			3	4	5	7	9	10	10	10	(EFSA NDA panel, 2004b)
<b>Calcium</b>	mg/d	No adequate data to derive a UL							2500	2500	2500	(EFSA NDA Panel, 2012b)
<b>Chloride</b>		No adequate data to derive a UL										(EFSA NDA panel, 2005c)
<b>Chromium<sup>(c)</sup></b>		No adequate data to derive a UL										(SCF, 2003c)
<b>Copper<sup>(d)</sup></b>	mg/d			1	2	3	4	4	5	ND		(SCF, 2003a)
<b>Iodine</b>	µg/d			200	250	300	450	500	600	600	600	(SCF, 2003b)
<b>Iron<sup>(e)</sup></b>		No adequate data to derive a UL										(EFSA NDA Panel, 2004c)
<b>Magnesium<sup>(f)</sup></b>	mg/d			ND	250	250	250	250	250	250	250	(SCF, 2001b)
<b>Molybdenum</b>	mg/d			0.1	0.2	0.25	0.4	0.5	0.6	0.6	0.6	(SCF, 2000b)
<b>Nickel</b>		No adequate data to derive a UL										(EFSA NDA Panel, 2005b)
<b>Phosphorus</b>		No adequate data to derive a UL										(EFSA NDA panel, 2005e)
<b>Potassium</b>		No adequate data to derive a UL										(EFSA NDA panel, 2005d)
<b>Selenium</b>	µg/d	45	55	70	95	130	180	230	255	255	255	(EFSA NDA Panel, 2023c)
<b>Silicon</b>		No adequate data to derive a UL										(EFSA NDA Panel, 2004d)
<b>Sodium</b>		No adequate data to derive a UL										(EFSA NDA Panel, 2005f)
<b>Tin</b>		No adequate data to derive a UL										(EFSA NDA Panel, 2005g)
<b>Vanadium</b>		No adequate data to derive a UL										(EFSA NDA Panel, 2004e)
<b>Zinc</b>	mg/d			7	10	13	18	22	25	25	25	(SCF, 2002d)
				<b>1-3 y</b>	<b>4-8 y</b>	<b>9-14 y</b>	<b>15-17 y</b>	<b>Adults</b>	<b>Pregnancy</b>	<b>Lactation</b>		
<b>Fluoride</b>	mg/d			1.5	2.5	5	7	7	7	7		(EFSA NDA Panel, 2005a)
			<b>4-12 mo</b>	<b>1-2 y</b>	<b>3-6 y</b>	<b>7-13 y</b>	<b>14-17 y</b>	<b>Adults</b>	<b>Pregnancy</b>	<b>Lactation</b>		
<b>Manganese</b>	mg/d		2	4	5	6	7	8	8	8		(EFSA NDA Panel, 2023b)

d, day; mo: month; ND: not defined; y, year

(a): i.e. from the 18<sup>th</sup> to the 26<sup>th</sup> week of life

(b): i.e. the second half of the first year of life (from the 27<sup>th</sup> to the 52<sup>th</sup> week of life)

(c): Trivalent chromium (Cr III)

(d): In 2023, the EFSA Scientific Committee established an Acceptable Daily Intake (ADI) of 0.07 mg/kg body weight copper (EFSA Scientific Committee, 2023).

(e): A review of the ULs for iron is on-going.



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- (f): Readily dissociable Mg salts (e.g. chloride, sulphate, aspartate, lactate) and compounds like MgO in food supplements, water or added to foods; does not include Mg naturally present in foods and beverages.



Summary of Tolerable Upper Intake Levels

Table 2: Tolerable Upper Intake Levels for **vitamins**

	Unit	4-6 mo <sup>(a)</sup>	7-11 mo <sup>(b)</sup>	1-3 y	4-6 y	7-10 y	11-14 y	15-17 y	Adults	Pregnancy	Lactation	Ref
<b>Biotin</b>		No adequate data to derive a UL										(SCF, 2001a)
<b>β-Carotene<sup>(c)</sup></b>		No adequate data to derive a UL										(SCF, 2000a)
<b>Folate<sup>(d)</sup></b>	µg/d	200	200	200	300	400	600	800	1000	1000	1000	(EFSA NDA Panel, 2023a)
<b>Niacin</b>												(SCF, 2002a)
<b>Nicotinamide</b>	mg/d											Inadequate data Inadequate data
<b>Nicotinic acid</b>	mg/d											
<b>Pantothenic acid</b>		No adequate data to derive a UL										(SCF, 2002b)
<b>Vitamin A<sup>(c,e)</sup></b>	µg RE/d											(SCF, 2002c)
<b>Vitamin B1</b>		No adequate data to derive a UL										(SCF, 2001c)
<b>Vitamin B12</b>		No clearly defined adverse effects										(SCF, 2000d)
<b>Vitamin B2</b>		No adequate data to derive a UL										(SCF, 2000c)
<b>Vitamin B6</b>	mg/d	2.2	2.5	3.2	4.5	6.1	8.6	10.7	12	12	12	(EFSA NDA Panel, 2023d)
<b>Vitamin C</b>		No adequate data to derive a UL										(EFSA NDA Panel, 2004a)
<b>Vitamin E<sup>(c)</sup></b>	mg/d											(SCF, 2003d)
<b>Vitamin K</b>		No adequate data to derive a UL										(SCF, 2003e)
		0-6 mo	7-11 mo <sup>(b)</sup>	1-3 y	4-6 y	7-10 y	11-14 y	15-17 y	Adults	Pregnancy	Lactation	
<b>Vitamin D</b>	µg VDE <sup>(g)</sup> / d	25	35	50	50	50	100	100	100	100	100	(EFSA NDA Panel, 2018, 2023e)

d, day; DHA, docosahexaenoic acid, DPA, docosapentaenoic acid; EPA, eicosapentaenoic acid; mo, month; RE, retinol equivalents; y, year

- (a): i.e. from the 18<sup>th</sup> to the 26<sup>th</sup> week of life
- (b): i.e. the second half of the first year of life (from the 27<sup>th</sup> to the 52<sup>th</sup> week of life)
- (c): A review of the ULs for vitamin A, β-Carotene and vitamin E is on-going
- (d): ULs apply to the combined intake of folic acid, (6S)-5-methyltetrahydrofolic acid glucosamine and l-5-methyltetrahydrofolic acid calcium salts added to foods or used in food supplements, under their authorised conditions of use; do not include folate naturally present in foods and beverages.
- (e): Retinol and retinyl esters
- (f): Does not apply to post-menopausal women, as it may not provide adequate margin of safety in relation to the possible decrease in bone density and the risk of bone fracture.
- (g): 1 µg VDE = 1 µg cholecalciferol (vitamin D3) = 1 µg ergocalciferol (vitamin D2) = 0.4 µg calcidiol monohydrate = 40 IU. This applies to calcidiol monohydrate at doses up to 10 µg/day.



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Table 3: **Other nutrients**

		<b>Ref</b>
<b>Total fat</b>	No adequate data to derive a UL for any age group	(EFSA NDA Panel, 2010)
<b>Saturated fatty acids</b>	No adequate data to derive a UL for any age group	(EFSA NDA Panel, 2010)
<b>Proteins</b>	No adequate data to derive a UL for any age group	(EFSA NDA Panel, 2012a)
<b>DHA, EPA, DPA</b>	No adequate data to derive a UL for any age group	(EFSA NDA Panel, 2012c)
<b>Sugars</b>	No adequate data to derive a UL for any age group	(EFSA NDA Panel, 2022b)

d, day; DHA, docosahexaenoic acid, DPA, docosapentaenoic acid; EPA, eicosapentaenoic acid

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