

Periodic Table of Elements and Major Nutritional Relationships

Summary of Major Antagonistic Relationships

Antagonistic nutrients work against each other.

The following is a partial list of
 • Mineral-mineral antagonists
 • Vitamin-mineral antagonists

Nutritional Element: Antagonists

Calcium (Ca)	Mg, Na, K, Zn, P, Fe, Mn, Be, Cd, Pb, Sr, Vit B1, B2, B3, B5, A
Magnesium (Mg)	Ca, Na, K, P, Fe, Mn, Co, Cd, Pb, Vit B1, B6, B9, B12, C, D, E
Sodium (Na)	Ca, Mg, K, Zn, Vit B2, B3, K
Potassium (K)	Ca, Na, Cu, Co, Li, Vit B1, B9, B12
Copper (Cu)	K, Zn, P, Fe, Se, Mo, S, Hg, Cd, Pb, Ag, Vit B3, B5, B6, A, C
Zinc (Zn)	Ca, Cu, P, Fe, Mn, Cr, Se, Co, Hg, Cd, Pb, Ni, Sn, Vit B1, Inositol, B9, B12, D, E
Phosphorus (P)	Ca, Mg, Cu, Zn, Fe, Mn, Vit D
Iron (Fe)	Ca, Cu, Zn, P, Mn, Cr, Co, Hg, Cd, Pb, Al, V, Sn, Vit B12, D, E
Manganese (Mn)	Ca, Mg, Cu, P, Fe, Cr, Co, Cd, Pb, V, Vit B1, B12, D, E
Chromium (Cr)	Mg, K, Zn, Fe, Mn, Pb, V, Vit B9, B12, D
Selenium (Se)	Cu, Zn, Fe, Mn, S, Hg, As, Cd, Pb, Tl, Sn, F, Ag, Vit B2, C, A, K
Boron (B)	Mg, P, Zn, Vit B2, A
Cobalt (Co)	K, Zn, Fe, Mn
Molybdenum (Mo)	Ca, Cu, S, Hg, W

Toxic Element: Antagonists

Arsenic (As)	Se, S, Vit E, β -carotene
Beryllium (Be)	Ca, S
Mercury (Hg)	Cu, Zn, Fe, Se, S, Vit E, β -carotene
Cadmium (Cd)	Cu, Zn, Fe, Mn, Se, S, Vit C
Lead (Pb)	Ca, Mg, Cu, Zn, Fe, Mn, Se, S, Vit C
Aluminium (Al)	Fe, Vit C

Metals											Non Metals																																		
Alkaline earth metals		Lanthanoids	Transition metals		Alkali metals	Actinoids		Post transition metals		Metaloids	Noble gases		Other nonmetals	Halogens																															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18																												
1 H Hydrogen 1.00794	Atomic # Symbol Name Atomic Mass																2 He Helium 4.002602																												
3 Li Lithium 6.941	4 Be Beryllium 9.012182	C Solid G Gas Liq Liquid Rf Unknown																10 Ne Neon 20.1797																											
11 Na Sodium 22.98976928	12 Mg Magnesium 24.3050																	18 Ar Argon 39.948																											
19 K Potassium 39.0983	20 Ca Calcium 40.078	21 Sc Scandium 44.955912	22 Ti Titanium 47.867	23 V Vanadium 50.9415	24 Cr Chromium 51.9961	25 Mn Manganese 54.938045	26 Fe Iron 55.845	27 Co Cobalt 58.933195	28 Ni Nickel 58.6934	29 Cu Copper 63.546	30 Zn Zinc 65.38	31 Ga Gallium 69.723	32 Ge Germanium 72.64	33 As Arsenic 74.92160	34 Se Selenium 78.96	35 Br Bromine 79.904	36 Kr Krypton 83.798																												
37 Rb Rubidium 85.4678	38 Sr Strontium 87.62	39 Y Yttrium 88.90585	40 Zr Zirconium 91.224	41 Nb Niobium 92.90638	42 Mo Molybdenum 95.96	43 Tc Technetium (97.9072)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.90550	46 Pd Palladium 106.42	47 Ag Silver 107.8682	48 Cd Cadmium 112.411	49 In Indium 114.818	50 Sn Tin 118.710	51 Sb Antimony 121.760	52 Te Tellurium 127.60	53 I Iodine 126.90447	54 Xe Xenon 131.293																												
55 Cs Caesium 132.9054515	56 Ba Barium 137.327	57 La Lanthanum 138.90547	72 Hf Hafnium 178.49	73 Ta Tantalum 180.94788	74 W Tungsten 183.84	75 Re Rhenium 186.207	76 Os Osmium 190.23	77 Ir Iridium 192.217	78 Pt Platinum 195.084	79 Au Gold 196.966569	80 Hg Mercury 200.59	81 Tl Thallium 204.3833	82 Pb Lead 207.2	83 Bi Bismuth 208.98040	84 Po Polonium (208.9824)	85 At Astatine (209.9871)	86 Rn Radon (222.0176)																												
87 Fr Francium (223)	88 Ra Radium (226)	89 Ac Actinium (227)	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (266)	107 Bh Bohrium (264)	108 Hs Hassium (277)	109 Mt Meitnerium (268)	110 Ds Darmstadtium (271)	111 Rg Roentgenium (272)	112 Uub Ununbium (285)	113 Uut Ununtrium (284)	114 Uuq Ununquadium (289)	115 Uup Ununpentium (288)	116 Uuh Ununhexium (292)	117 Uus Ununseptium	118 Uuo Ununoctium (294)																												
58 – 71																																													
90 – 103																																													
<table border="1"> <tr> <td>58 Ce Cerium 140.116</td> <td>59 Pr Praseodymium 140.90765</td> <td>60 Nd Neodymium 144.242</td> <td>61 Pm Promethium (145)</td> <td>62 Sm Samarium 150.36</td> <td>63 Eu Europium 151.964</td> <td>64 Gd Gadolinium 157.25</td> <td>65 Tb Terbium 158.92535</td> <td>66 Dy Dysprosium 162.500</td> <td>67 Ho Holmium 164.93032</td> <td>68 Er Erbium 167.259</td> <td>69 Tm Thulium 168.93421</td> <td>70 Yb Ytterbium 173.054</td> <td>71 Lu Lutetium 174.9668</td> </tr> <tr> <td>90 Th Thorium 232.03806</td> <td>91 Pa Protactinium 231.03588</td> <td>92 U Uranium 238.02891</td> <td>93 Np Neptunium (237)</td> <td>94 Pu Plutonium (244)</td> <td>95 Am Americium (243)</td> <td>96 Cm Curium (247)</td> <td>97 Bk Berkelium (247)</td> <td>98 Cf Californium (251)</td> <td>99 Es Einsteinium (252)</td> <td>100 Fm Fermium (257)</td> <td>101 Md Mendelevium (258)</td> <td>102 No Nobelium (259)</td> <td>103 Lr Lawrencium (262)</td> </tr> </table>																		58 Ce Cerium 140.116	59 Pr Praseodymium 140.90765	60 Nd Neodymium 144.242	61 Pm Promethium (145)	62 Sm Samarium 150.36	63 Eu Europium 151.964	64 Gd Gadolinium 157.25	65 Tb Terbium 158.92535	66 Dy Dysprosium 162.500	67 Ho Holmium 164.93032	68 Er Erbium 167.259	69 Tm Thulium 168.93421	70 Yb Ytterbium 173.054	71 Lu Lutetium 174.9668	90 Th Thorium 232.03806	91 Pa Protactinium 231.03588	92 U Uranium 238.02891	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawrencium (262)
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NB: Imbalances between nutrients are much more common than deficiencies of individual nutrients. In some circumstances certain nutrients can antagonise a particular nutrient, and in others can enhance utilisation of that particular nutrient. These relationships may be direct or indirect. Many relationships are mutual, but not all.

Sources for Antagonistic and Synergistic Relationships: Watts, DL. 2006. Trace Elements and Other Essential Nutrients. 5th ed. and research conducted by Trace Elements Inc.

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Summary of Major Synergistic Relationships

Synergistic nutrients work together, in co-operation with each other.

The following is a partial list of
 • Mineral-mineral synergists
 • Vitamin-mineral synergists

Nutritional Element: Synergists

Calcium (Ca)	Mg, Na, K, Cu, P, Se, B, Sr, Si, Vit A, E, C, D
Magnesium (Mg)	Ca, K, Zn, P, Mn, Cr, Vit B1, B2, B3, B6, A, C, E
Sodium (Na)	Ca, K, Cu, P, Se, Co, Vit B1, B6, D, E
Potassium (K)	Mg, Na, Zn, P, Fe, Mn, Co, Vit B2, A
Copper (Cu)	Ca, Na, Fe, Se, Co, Vit D, B1, B12, C, B9
Zinc (Zn)	Mg, K, P, Cr, Mn, Vit B1, B3, B5, B6, A, E
Phosphorus (P)	Ca, Mg, Na, K, Zn, Fe, Cr, Vit A
Iron (Fe)	Na, K, Cu, P, Mn, Cr, Se, Vit E, B1, B2, B3, B6, B12, C, A
Manganese (Mn)	Mg, K, Zn, P, Fe, Vit B1, B3, B5, B6, A, E
Chromium (Cr)	Mg, K, Zn, Vit B1, B2, B3, B6, A, E
Selenium (Se)	Ca, Na, K, Cu, Fe, Mn, Co, Vit B1, B6, A, C, D, E
Molybdenum (Mo)	Ca, Cu, Na, Fe, Se, Co, Vit D, B1, B12, C, B9



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Conditions associated with absolute or relative mineral deficiencies

Practitioner Only Reference Material

MINERAL	CONDITIONS			
Calcium	Allergies (histamine) (A)	Osteoporosis (Type1) (A)	Hyperadrenia (A)	Vitamin A excess (A)
	Muscle cramps (A)	Hyperthyroidism (A)	Anxiety (A)	High blood pressure (A)
	Hypoparathyroidism (A)	Vitamin D deficiency (A)	Hyperactivity (A)	Insomnia (Type 1) (A)
Magnesium	Hyperactivity (A)	Seizures (A)	Colitis (R)	Alcoholism (A)
	Noise sensitivity (A-R)	Epilepsy (A)	Diverticulosis (R)	Adrenal hyperactivity (A)
	Allergies (histamine) (A)	Renal dysfunction (A-R)	Arteriosclerosis (A-R)	Excessive perspiration (A)
	Hyperthyroidism (A)	Parathyroid dysfunction (A-R)	Diabetes (A-R)	Cardiovascular disease (A-R)
Potassium	Adrenal insufficiency (A)	Hypochlorhydria (A)	Hypothyroidism (A-R)	Transient hypertension (A)
	Parasympathetic dominance (A)	Poor digestion (A)	Fatigue (A-R)	Carpopedal spasms (A)
	Hyperparathyroidism (A)	Acne (A)	Hypoglycaemia (A-R)	Cardiac irregularity (A-R)
Iron	Anaemia (A)	Attention deficit disorder (A)	Hypochlorhydria (A)	Neurotransmitter disturbance (A)
	Palpitations (A)	B6 deficiency (A-R)	Fatigue (A)	Toxic metal accumulation (A)
	Low protein intake (A)	Pica (A)	Hypothyroidism (A)	Stomatitis (A)
	Immunodeficiency (A)	Glossitis (A)	Splitting nails (A)	Candida (A)
Copper	Osteoporosis (Type 1) (A)	Disc degeneration (A-R)	Rheumatoid Arthritis (A)	Iron toxicity (A-R)
	Hypercholesterolaemia (A)	Anaemia (A-R)	Infections (bacterial) (A)	Toxic metal accumulation (A)
	Hypoestrogenism (A-R)	Inflammation (A)	Premature ventricular contraction (A)	Sympathetic dominance (A)
Manganese	Glucose intolerance (A)	Anaemia (A)	Fatigue (A-R)	Weight loss (A)
	Osteochondrosis (A)	Iron toxicity (A-R)	Hypercholesterolaemia (A)	Adrenal insufficiency (A)
Zinc	PMS (R)	Anorexia (R)	Post-partum depression (R)	Autism (R)
	Viruses (R)	Fungal infection (A-R)	AIDS (R)	Sterility (A-R)
	Yeast infection (Candida) (R)	Arthritis (R)	Eclampsia (R)	Gastric ulcers (R)
	Diabetes (A-R)	Peptic ulcers (A)	Prostate hypertrophy (A)	Macular degeneration (A)
	Sickle Cell anaemia (R)	Poor wound healing (A-R)	Lowered immunity (A-R)	Stretch marks (A-R)
	White spots on fingernails (R)	Anosmia (A)	Hypogeusia (A)	Slow growth (A-R)
Chromium	Diabetes (A-R)	Glucose intolerance (A-R)	Peripheral neuropathy (A)	Slow growth (A)
	Hypercholesterolaemia (A-R)	Atherosclerosis (A-R)	Glycosuria (A)	Low respiratory quotient (A)
Molybdenum	Dental cavities (A)	Bronchial asthma (A-R)	Sulfite sensitivity or allergy (A-R)	Wilson's disease (A-R)
	Oesophageal cancer (A)			
Selenium	Cataracts (A)	Chronic inflammatory conditions (A)	Anaemia (A)	Lowered Immunity (A)
	Hypothyroidism (A)	Cardiomyopathy (A)		

Absolute (A) deficiency :

Develops as a result of decreased absorption with increased excretion.

Relative (R) deficiency :

Develops as a result of compartmental displacement without an increase in excretion.

SOURCE: Based on current literature and research conducted by Dr David Watts, Trace Elements Inc.

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